SOLVED MCQS OF PAST PAPERS (2015 - 2010)

XII MATHEMATICS

FROM THE DESK OF: FAIZAN AHMED

2015 ANNUAL

Choose the correct answer for each from the given options.

i. $\frac{d}{dx}(lnx) =$:

a. e^x b. lnx c. $\boxed{\frac{1}{x}}$ d. x

ii. A function $f(x)$ is maximum at $x = a$ if:

a. $f''(a) = 0$ b. $\boxed{f''(a) < 0}$ c. $f''(a) > 0$ d. $f''(a) = a$

iii. $\int tan2xdx$

a. $lnsec2x + c$ b. $\boxed{\frac{lnsec\,2x}{2} + c}$ c. $\frac{lntan\,2x}{2} + c$ d. $\sec^2 2x + c$

iv. $\int 3e^{3x}dx$

a. $3e^{3x}$ b. $\boxed{e^{3x} + c}$ c. $\frac{e^{3x}}{3} + c$ d. $-\frac{e^{3x}}{3} + c$

v. $\int \frac{(1+x)}{x^2+2x}dx$

a. $\ln(x^2 + 2x)$ b. $\ln(2x + 1) + c$ c. $\boxed{\ln\sqrt{x^2 + 2x} + c}$ d. $\ln(x^2 + 2x)^2 + c$

vi. Equation of circle with centre at the origin and radius 2r is $x^2 + y^2 =$:

a. r^2 b. $2r^2$ c. $\boxed{4r^2}$ d. $4r$

vii. The radius of the circle $x^2 + y^2 + 2gx + 2fy + k = 0$

a. $r = \sqrt{g^2 + f^2 + k}$ b. $\boxed{r = \sqrt{g^2 + f^2 - k}}$ c. $r = \sqrt{g^2 - f^2 + k}$ d. $r = \sqrt{f^2 - g^2 + k}$

viii. Length of Latus rectum of an ellipse is:

a. $\frac{2a^2}{b}$ b. $\boxed{\frac{2b^2}{a}}$ c. $-\frac{2a^2}{a}$ d. $\frac{b^2}{a}$

ix. If $b^2 = a^2(1 - e^2)$, then the conic is:

a. circle b. Parabola c. Hyperbola d. $\boxed{\text{ellipse}}$

x. In the parabola, $y^2 = 4ax$, $|4a|$ represents:

a. focus b. vertex c. $axis$ d. $\boxed{\text{length of latus rectum}}$

xi. If vectors $\vec{a}$ and $\vec{b}$ are perpendicular, then $\vec{a}.\vec{b} =$:

a. 1 b. -1 c. $\boxed{0}$ d. $\frac{\pi}{2}$

xii. Magnitude of a vector $(1, -\sqrt{3}, -\sqrt{5})$ is:

a. 9 b. $\boxed{3}$ c. $\sqrt{3}$ d. $\sqrt{5}$

xiii. The function $f(x) = cosx$ is:

a. $\boxed{even}$ b. odd c. modulus d. inverse

xiv. Limit of sequence $a_n = \frac{1}{n}$ is:

a. -1 b. 1 c. $\boxed{0}$ d. ∞

xv. $\lim_{x \to 3} \frac{x^2-9}{x-3} =$:

a. $\frac{1}{6}$ b. $\boxed{6}$ c. 0 d. ∞

xvi. The distance between the points $(\mu cos\theta, \mu sin\theta)$ and $(0,0)$ is:

a. 1 unit b. $\boxed{\mu \text{ units}}$ c. μ^2 units d. $-1\ unit$

xvii. The slope of vertical line is:

a. 0 b. 1 c. $\boxed{\infty}$ d. -1

xviii. Three points A, B and C are collinear if:

a. $\Delta ABC = 1$ b. $\boxed{\Delta ABC = 0}$ c. $\Delta ABC = \infty$ d. $\Delta ABC = -1$

xix. If the slope of a line is -2 and $y - intercept$ is 3, the equation of line is:

a. $\boxed{2x + y - 3 = 0}$ *b.* $x + 2y - 3 = 0$ *c.* $3x + 2y = 0$ *d.* $x + y + 2 = 0$

xx. If two lines are perpendicular, then:

a. $a_1a_2 + b_1b_2 = 1$ b. $a_1b_2 + a_2b_1 = 0$ c. $\boxed{a_1a_2 + b_1b_2 = 0}$ d. $a_1a_2 + b_1b_2 = 1$

2014 ANNUAL

Q1. Choose the correct answer for each from the given options.

i. The slope of the line $3x - 5y - 15 = 0$ is:

a. $\frac{5}{3}$ b. $-\frac{5}{3}$ c. $-\frac{3}{5}$ d. $\boxed{\frac{3}{5}}$

ii. $\frac{d}{dx}(\sec^2 x) =$:

a. $\sec^2 x$ b. tanx c. $\sec^2 x\ tanx$ d. $\boxed{2\sec^2 x\ tanx}$

iii. $\int \frac{1}{x+1} dx$

a. $(x+1)^0 + c$ b. $(x+1)^{-2} + c$ c. $\boxed{\ln(x+1) + c}$ d. $-\ln(x+1) + c$

iv. The length of Major Axis of the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$:

a. 25 b. 4 c. 6 d. $\boxed{8}$

v. Magnitude of the vector $\overline{a} = 3\hat{\imath} - \hat{\jmath} + 2\hat{k}$ is:

a. 13 b. $\sqrt{12}$ c. $\boxed{\sqrt{14}}$ d. $\sqrt{11}$

vi. $\lim_{x \to 0} \frac{\sin 2x}{x} =$:

a. 0 b. 1 c. $\frac{1}{2}$ d. $\boxed{2}$

vii. $\int e^{3x} dx =$:

a. $e^{3x} + c$ b. $3e^{3x} + c$ c. $\frac{e^{3x}}{3} + c$ d. $\frac{e^{3x}}{3} + c$

viii. A function $f(x) = |x| - x^2$ is:

a. odd b. $\boxed{even}$ c. neither even nor odd d. modulus

ix. $\frac{d}{dx}(\sin^2 x) =$:

a. $2sinx$ b. $\boxed{2sinxcosx}$ c. $-2cosx$ d. $sinxcosx$

x. $\int e^{ax} dx =$:

a. $ae^{ax} + c$ b. $e^{ax} + c$ c. $\boxed{\frac{e^{ax}}{a} + c}$ d. $-ae^{ax} + c$

xi. $\int \frac{2xdx}{1+x^2} =$:

a. $\boxed{ln(1+x^2) + c}$ b. $\frac{1}{1+x^2} + c$ c. $\tan^{-1} x + c$ d. $\frac{1}{ln(1+x^2)} + c$

xii. The centre of the circle $x^2 + y^2 - 10x + 6y + 18 = 0$ is:

a. $(10, -6)$ b. $(-10, 6)$ c. $\boxed{(5, -3)}$ d. $(-5, 3)$

xiii. Two lines represented by $ax^2 + 2hxy + by^2 = 0$ will be perpendicular if:

a. $\boxed{a + b = 0}$ b. $a - b = 0$ c. $h^2 - ab = 0$ d. $a = b$

xiv. If $e < 1$, then the conic is:

a. circle b. $\boxed{ellipse}$ c. parabola d. hyperbola

xv. If vector $\overline{a}$ and $\overline{b}$ are perpendicular, then $\overline{a}\cdot\overline{b}=$:

a. 1 b. -1 c. $\boxed{0}$ d. $\frac{\pi}{2}$

xvi. In the parabola $y^2=4ax$, $|4a|$ represents:

a. focus b. vertex c. axis d. $\boxed{\text{length of latus rectum}}$

xvii. $\frac{d}{dx}(\cos^{-1}x)=$:

a. $\frac{1}{\sqrt{1-x^2}}$ b. $\frac{1}{1-x^2}$ c. $\boxed{-\frac{1}{\sqrt{1-x^2}}}$ d. $\frac{1}{\sqrt{x^2-1}}$

xviii. The unit vector in the direction of $\overline{a}=\hat{\imath}+\hat{\jmath}+\hat{k}$ is:

a. 1 b. $\sqrt{3}$ c. $\boxed{\frac{1}{\sqrt{3}}(\hat{\imath}+\hat{\jmath}+\hat{k})}$ d. $\frac{1}{\sqrt{3}}$

xix. The length of the tangents drawn from $(3,-1)$ to the circle $2x^2+2y^2+5=0$ is:

a. $\sqrt{10.5}$ b. $\frac{12}{5}$ c. $\frac{25}{2}$ d. $\boxed{\frac{5}{\sqrt{2}}}$

xx. The equation of the circle with centre (0,0) and radius r is:

a. $x^2+y^2=1$ b. $x^2+y^2=$ c. $x^2=r^2$ d. $x^2+y^2=r^2$

2013 ANNUAL

Q1. Choose the correct answer for each from the given options.

i. $\int e^x\,dx=$:.

a. $x+c$ b. $\frac{x}{e}+c$ c. $-\frac{x}{e}+c$ d. $\boxed{e^x+c}$

ii. Centre of the circle $x^2+y^2+6x-8y+3=0$ is:

a. (3,4) b. $(-3,-4)$ c. $(3,-4)$ d. $\boxed{(-3,4)}$

iii. If $f(y)=\log_a y$, for all y in $\mathbb{R}^+$, then $\frac{d}{dy}(\log_a y)=$:

a. $\frac{1}{y}lna\;dy$ b. $\frac{1}{ylne}dy$ c. $\frac{1}{y}a^y\,dy$ d. $\boxed{\frac{1}{ylna}}$

iv. If two vectors $\vec{A}\neq 0$ and $\vec{B}\neq 0$ are such that $\vec{A}.\vec{B}\neq 0$, then vectors are:

a. parallel b. $\boxed{\text{perpendicular}}$ c. opposite d. equal

v. Vertex of the parabola $(x+2)^2=4(y-2)$ is:

a. $(-2,-2)$ b. $(3,-2)$ c. $(-2,3)$ d. $\boxed{(-2,2)}$

vi. A function 'f' is said to be odd whenever:

a. $f(x)=0$ b. $f(-x)=f(x)$ c. $\boxed{f(-x)=-f(x)}$ d. $f(x)=I$

vii. Point of concurrency of the medians of a triangle is called:

a. In-centre b. ortho-centre c. $\boxed{\text{centroid}}$ d. circum-centre

viii. If $\lim_{n\to\infty}\left(1+\frac{1}{n}\right)^n=$:

a. 1 b. $\frac{1}{e}$ c. $\boxed{e}$ d. $-e$

ix. Derivative of x^a with respect to 'x' is:

a. $xlna$ b. $x^a\,lnx$ c. $\frac{x^a}{lna}$ d. $\boxed{ax^{a-1}}$

x. In a hyperbola $c^2=$:

a. $\boxed{a^2+b^2}$ b. a^2-b^2 c. b^2-a^2 d. $\frac{2b^2}{a^2}$

xi. In the parabola, $y^2=4ax$, $|4a|$ represents:

a. focus b. vertex c. axis d. $\boxed{\text{length of latus rectum}}$

xii. $\vec{a}.\vec{b}\times\vec{c}=$:

a. $\vec{a}\vec{b}\vec{c}$ b. $\vec{a}\times\vec{b}\times\vec{c}$ c. $\vec{a}\cdot\vec{b}\cdot\vec{c}$ d. $\boxed{\vec{a}\times\vec{b}\cdot\vec{c}}$

xiii. $\lim_{x\to 4}\frac{x^2-16}{x-4}=$:

a. 4 b. $\boxed{8}$ c. 0 d. ∞

xiv. If $f(x)=sin9x$, then $f'(x)=$:

a. Cos9x b. $-cos9x$ c. $9cosx$ d. $\boxed{9cos9x}$

xv. $3x-5y-15=0$ is parallel to the line:

a. $5x-3y-15=0$ b. $x-y+15=0$ c. $3x+y-15=0$ d. $\boxed{6x-10y+15=0}$

xvi. $\frac{d}{dx}(\sin^{-1}x)=$:

a. $\frac{1}{\sqrt{1+x^2}}$ b. $\boxed{\frac{1}{\sqrt{1-x^2}}}$ c. $\frac{-1}{\sqrt{x^2-1}}$ d. $\frac{-1}{\sqrt{1-x^2}}$

xvii. $\int secxtanx\,dx=$:

a. $secxtanx+c$ b. $secx+tanx+c$ c. $\boxed{secx+c}$ d. tanx+c

xviii. Length of Latus rectum of an ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is:

a. $\frac{b^2}{a}$ b. $\boxed{\frac{2b^2}{a}}$ c. $\frac{b^2}{2a}$ d. $\frac{b^2}{2a^2}$

xix. Slope of y-axis is:

a. 0 b. 1 c. -1 d. $\boxed{\infty}$

xx. If $\vec{a}=\overline{p_1p_1}$, where $P_1(0,0,1)$ and $P_2(-3,1,2)$ then $|\vec{a}|=$:

a. $\sqrt{12}$ b. $\sqrt{10}$ c. $\sqrt{13}$ d. $\boxed{\sqrt{11}}$

2012 ANNUAL

Q1. Choose the correct answer for each from the given options.

i. If a line is perpendicular to y-axis then its equation is:

a. $x=0$ b. $\boxed{y=constant}$ c. $x=constant$ d. $y=0$

ii. If $f(x)=\tan^{-1}3x$, then $f'(x)$ is:

a. $\frac{1}{1+9x^2}$ b. $\frac{1}{9+x^2}$ c. $\boxed{\frac{3}{1+9x^2}}$ d. $\frac{3}{1+3x^2}$

iii. $f(x)=sinx+cosx$ is:

a. Even function b. odd function c. $\boxed{\textit{neither even nor odd}}$ d. modulus function

iv. $\int e^{sinx}cosx\,dx=$:

a. $e^{cosx}+c$ b. $e^{cosx}sinx+c$ c. $e^{sinx}sinx+c$ d. $\boxed{e^{sinx}+c}$

v. The length of the tangents drawn from $(3,-1)$ to the circle $2x^2+2y^2+5=0$ is:

a. 5 b. 15 c. $\boxed{\sqrt{15}}$ d. $\sqrt{5}$

vi. If $b^2=a^2(e^2-1)$, then the conic is:

a. parabola b. ellipse c. $\boxed{hyperbola}$ d. circle

vii. If $\vec{a}=\overline{p_1p_1}$, where $P_1(0,0,1)$ and $P_2(-3,1,2)$ then $|\vec{a}|=$:

a. $\sqrt{12}$ b. $\sqrt{10}$ c. $\sqrt{13}$ d. $\boxed{\sqrt{11}}$

viii. The line $4x+5y+2=0$ is perpendicular to the line:

a. $5x+4y-2=0$ b. $\boxed{5x-4y+3=0}$ c. $4x+5y-2=0$ d. $-5x-4y+2=0$

ix. $\lim_{n\to\infty}\frac{\sin\frac{4}{5}x}{x}=$:

a. $\frac{5}{4}$ b. $\boxed{\frac{4}{5}}$ c. $\frac{1}{4}$ d. $\frac{1}{5}$

x. $\int\frac{f'(x)}{f(x)}dx=$:

a. $\frac{\{f(x)\}^{n+1}}{n+1}+c$ b. $\boxed{lnf(x)+c}$ c. $\frac{1}{f(x)}+c$ d. $lnf'(x)+c$

xi. If $y = lnsinx$, then $\frac{dy}{dx} =$:

a. $\frac{1}{sinx}$ b. $cosx$ c. $\boxed{cotx}$ d. $tanx$

xii. The distance between foci of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is:

a. 2a b. $\boxed{2c}$ c. $\frac{2a}{c}$ d. 2b

xiii. The point of intersection of internal bisectors of the angles of triangle is called:

a. $\boxed{In - centre}$ b. centroid c. ortho-centre d. circum-centre

xiv. Distance of the point (4,5) from the y-axis is:

a. 5 units b. $\boxed{4\ units}$ c. 9 units d. 1 unit

xv. Two lines represented by $ax^2 + 2hxy + by^2 = 0$ are perpendicular to each other, if:

a. $\boxed{a + b = 0}$ b. $a - b = 0$ c. $a = 0$ d. $b = 0$

xvi. Area of triangle ABC, when A,B,C are collinear is:

a. ∞ b. $\boxed{zero}$ c. positive d. negative

xvii. The length of latus rectum of the parabola $x^2 = 4ay$, is:

a. 4a b. a c. 4 d. $\boxed{|4a|}$

xviii. The centre of the circle $2x^2 + 2y^2 + 8x = 0$ is:

a. (0,0) b. $(-4,0)$ c. (8,0) d. $\boxed{(-2,0)}$

xix. If $y = \log_a x$, then $dy =$:

a. $\frac{1}{x} lna\ dx$ b. $\frac{1}{xlne} dx$ c. $\boxed{\frac{1}{xlna} dx}$ d. $\frac{1}{x} a^x dx$

xx. The necessary condition for $f(x)$ to have an extreme value, is:

a. $f'(x) = 1$ b. $f(x) = 0$ c. $\boxed{f'(x) = 0}$ d. $f''(x) = 0$

2011 ANNUAL

Q1. Choose the correct answer for each from the given options.

i. If a line is parallel to x-axis then its equation is:

a. $x = 0$ b. $y = 0$ c. $x = constant$ d. $\boxed{y = constant}$

ii. The vertex of the parabola $(x - 1)^2 = 8(y + 2)$ is:

a. $\boxed{(1,-2)}$ b. (0,2) c. (2,0) d. (0,0)

iii. If $f(x) = \tan^{-1} 2x$, then $f'(x)$ is:

a. $\frac{1}{1+x^2}$ b. $\frac{1}{4+x^2}$ c. $\frac{1}{1+4x^2}$ d. $\boxed{\frac{2}{1+4x^2}}$

iv. If $y = cotx$, then $dy =$:

a. $-cosecxdx$ b. $-cosec^2 x$ c. $\boxed{-cosec^2 xdx}$ d. $\cot^2 x\ dx$

v. A function $f(x) = \frac{x}{|x|}, x \neq 0$ is:

a. Even function b. $\boxed{odd\ function}$ c. circular function d. neither even nor odd

vi. If a straight line is parallel to y-axis then its slope is:

a. 1 b. 0 c. -1 d. $\boxed{\infty}$

vii. The angle between the pair of lines $3x^2 + 8xy - 3y^2 = 0$ is:

a. $\boxed{90^0}$ b. 45^0 c. 0^0 d. 180^0

viii. $\lim_{n\to\infty} \left(1 + \frac{1}{n}\right)^n =$:

a. 0 b. ∞ c. $\boxed{e}$ d. 1

ix. $\lim_{x\to a} \frac{f(x)-f(a)}{x-a} =$:

a. $f'(x)$ b. $\boxed{f'(a)}$ c. $f'(0)$ d. $f'(1)$

x. $\frac{d}{dx}(\sin^2 x + \cos^2 x) =$:

a. 1 b. $2sinxcosx$ c. $-2sinxcosx$ d. $\boxed{0}$

xi. $\lim_{n\to a} \frac{x^n - a^n}{x-a} =$:

a. 1 b. $\boxed{na^{n-1}}$ c. n d. 0

xii. If $e = 1$, then conic is:

a. circle b. ellipse c. $\boxed{parabola}$ d. hyperbola

xiii. The centre of the circle $x^2 + y^2 + 6x - 10y + 33 = 0$ is:

a. $\boxed{(-3,5)}$ b. $(-3,-5)$ c. $(3,-5)$ d. $(3,5)$

xiv. The vertices of the hyperbola $\frac{x^2}{16} - \frac{y^2}{4} = 1$ are:

a. $(\pm 2,0)$ b. $(0,\pm 2)$ c. $(0,\pm 4)$ d. $\boxed{(+\_4,0)}$

xv. If a and b are any two vectors then $(a-b)\times(a+b)$ is:

a. $a^2 - b^2$ b. 0 c. $a \times b$ d. $\boxed{2(a\times b)}$

xvi. $\int sin30^0\, dx =$:

a. $cos30^0 + c$ b. $-\frac{cos\,30^0}{30^0} + c$ c. 0 d. $\boxed{0.5x + c}$

xvii. The distance between foci of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is:

a. 2a b. $\boxed{2c}$ c. 2b d. $2\frac{a}{e}$

xviii. If $n = -1$, then $\int\{f(x)\}^n f'(x)\, dx =$:

a. $\frac{\{f(x)\}^{n+1}}{n+1} + c$ b. $\frac{\{f(x)\}^{n+1}}{n} + c$ c. $\boxed{lnf(x) + c}$ d. $\frac{\{f(x)\}^{n-1}}{n-1} + c$

xix. Which of the following circles passes through the origin.

a. $x^2 + y^2 + 8x + 7 = 0$ b. $x^2 + y^2 - 9y + 11 = 0$

c. $\boxed{x^2 + y^2 + 8x + 11y = 0}$ d. $x^2 + y^2 - 8x + 11y + 19 = 0$

xx. $\int e^{tanx} \sec^2 x\, dx =$:

a. $\sec^2 x$ b. $e^{secx} + c$ c. $\boxed{e^{tanx} + c}$ d. $tanx + c$

2010 ANNUAL

Q1. Choose the correct answer for each from the given options.

i. $f(x) = sinx + cosx$ is a/an:

a. Even function b. odd function c. $\boxed{neither\ even\ nor\ odd}$ d. modulus function

ii. A line is parallel to x-axis if its slope is:

a. 1 b. $\boxed{0}$ c. -1 d. 2

iii. The line $2x + 3y + 6 = 0$ is perpendicular to the line:

a. $2x + 3y - 8 = 0$ b. $2x - 3y + 7 = 0$ c. $x - y + 6 = 0$ d. $\boxed{3x - 2y + 9 = 0}$

iv. $\lim_{x\to 0} \frac{sin\frac{7x}{3}}{x} =$:

a. $\boxed{\frac{7}{3}}$ b. 7 c. $\frac{3}{7}$ d. 3

v. $\lim_{x\to 2} \frac{x^2-4}{x-2} =$:

a. 8 b. $\boxed{4}$ c. not defined d. 0

vi. If $f(x) = tan9x$, then $f'(x)$ is:

a. $\sec^2 9x$ b. $9\sec^2 x$ c. $\boxed{9\sec^2 9x}$ d. $\sec^2 9x$

vii. If $f(x) = lnx^3$, then $f'(x)$ at $x = -2$ is:

a. $\frac{2}{3}$ b. $\boxed{-\frac{3}{2}}$ c. $-\frac{2}{3}$ d. 1

viii. If $s = f(t)$, then $\frac{d^2s}{dt^2}$ is:

a. Distance covered at time 't' b. speed at time t c. $\boxed{\textit{acceleration at time t}}$ d. velocity at time t

ix. The necessary condition for $f(x)$ to have extreme value is:

a. $f'(x) = 1$ b. $f(x) = 0$ c. $\boxed{f'(x) = 0}$ d. $f''(x) = 0$

x. $\int x^p\, dx, p \neq -1$ is equal to:

a. $\boxed{\frac{x^{p+1}}{p+1} + c}$ b. $\frac{x^{p-1}}{p-1} + c$ c. $\frac{x^{p+1}}{p-1} + c$ d. $\frac{x^{p-1}}{p+1} + c$

xi. The slope of the tangent to the curve $y = 6x^2$ at $(1, -1)$ is:

a. -12 b. $\boxed{12}$ c. 15 d. 6

xii. $\int \{f(x)\}^n f'(x)\, dx =$:

a. $\frac{\{f(x)\}^n}{n+1} + c$ b. $\boxed{\frac{\{f(x)\}^{n+1}}{n+1} + c}$ c. $\frac{\{f(x)\}^{n-1}}{n-1} + c$ d. $\ln f(x) + c$

xiii. $\int e^{tanx} \sec^2 x\, dx =$:

a. $\sec^2 x$ b. $e^{secx} + c$ c. $\boxed{e^{tanx} + c}$ d. $tanx + c$

xiv. The centre of the circle $x^2 + y^2 - 6x + 8y - 24 = 0$ is:

a. $\boxed{(3, -4)}$ b. $(-3,4)$ c. $(4,3)$ d. $(3,4)$

xv. The length of the tangents drawn from $(-2,3)$ to the circle $x^2 + y^2 + 3 = 0$ is:

a. 3 b. $\boxed{4}$ c. 5 d. 6

xvi. If eccentricity $e = \frac{3}{2}$, then conic is:

a. parabola b. $\boxed{\textit{hyperbola}}$ c. ellipse d. circle

xvii. If $b^2 = a^2(1 - e^2)$, the conic is:

a. Circle b. parabola c. $\boxed{\textit{ellipse}}$ d. hyperbola

xviii. If $\overline{a}.\overline{b} = 0$, then the angle between the vectors $\overline{a}$ and $\overline{b}$ is:

a. 0 b. $\boxed{\frac{\pi}{2}}$ c. $\frac{\pi}{3}$ d. π

xix. $|\overline{a}|$ of a vector $\overline{a}$ when $\overline{a} = \overline{P_1P_2}$, where $P_1(0,0,1)$ and $P_2(-3,1,2)$ is:

a. $\sqrt{12}$ b. $\sqrt{10}$ c. $\boxed{\sqrt{11}}$ d. $\sqrt{13}$

xx. An equation involving $\frac{dy}{dx}$ is called ___________ equation:

a. Polynomial b. $\boxed{\textit{Differential}}$ c. Exponential d. Logarithmic