

MATH QUIZ 1

① find any intercepts.

$$y = x^2 + 5x - 6.$$

$$y = (0)^2 - 5(0) - 6 \\ = -6$$

$$x = x^2 + 5x - 6.$$

$$p = 6 \\ s = 5$$

$$= (x+6)(x-1)$$

$$x+6 = 0$$

$$x = -6.$$

$$x-1 = 0$$

$$x = 1$$

$$(i) (x, y) = (1, -6)$$

$$(i) (x, y) = (-6, -6)$$

$$(ii) (x, y) = (1, -6).$$

Our Ref:

Your Ref:

(2) sketch a graph

point (2, 2)

gradient (a) 1,

(b) -2

(c) $-\frac{3}{2}$

a) $M = 1$

$$1 = \frac{y-2}{x-2}$$

$$1(x-2) = y-2$$

$$x-2+2 = y$$

$$\underline{\underline{x = y}}$$

(b) $M = -2$

$$-2 = \frac{y-2}{x-2}$$

$$-2(x-2) = y-2$$

$$-2x+4 = y-2$$

$$-2x+4 = y-2$$

$$-2x+4+2 = y$$

$$-2x+6 = y$$

$$\underline{\underline{y = -2x+6}}$$

(c) $M = -\frac{3}{2}$

$$-\frac{3}{2} = \frac{y-2}{x-2}$$

$$-\frac{3}{2}(x-2) = y-2$$

$$-\frac{3}{2}x+3 = y-2$$

$$-\frac{3}{2}x+3+2 = y$$

$$\underline{\underline{y = -\frac{3}{2}x+5}}$$

points of $x = y$

x	0	1	2	3
y	0	1	2	3



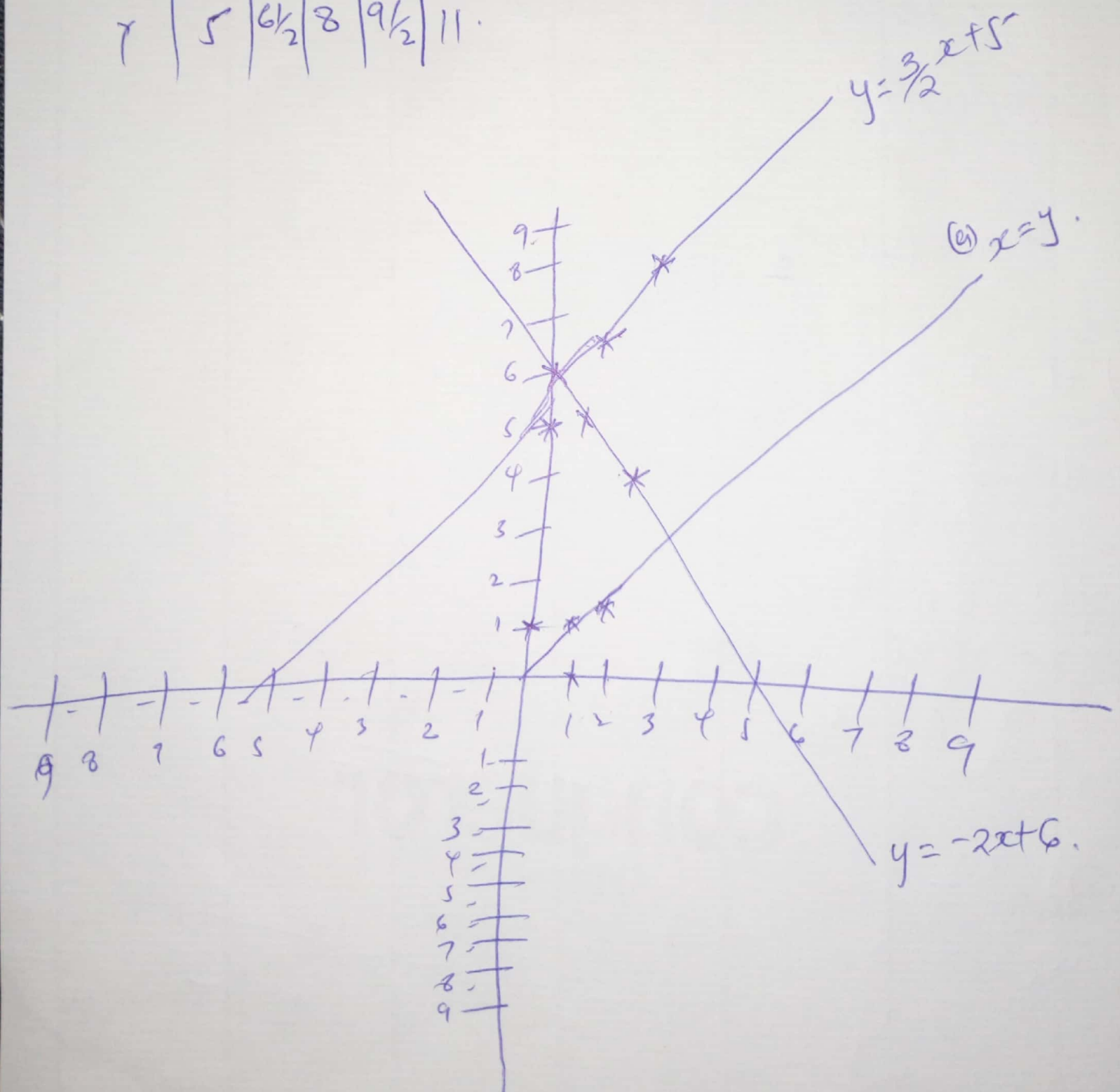
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(b) $y = -2x + 6$

x	0	1	2	3	4
y	6	4	2	0	-2

(c) $y = \frac{3}{2}x + 5$

x	0	1	2	3	4
y	5	$6\frac{1}{2}$	8	$9\frac{1}{2}$	11



Our Ref:

Your Ref:

(3) find an equation of the line that passes through points

$$(-4, 9) (1, 4)$$

$$M = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$M = \frac{4 - 9}{1 - (-4)}$$

$$M = \frac{-5}{5}$$

$$M = -1$$

$$-1 = \frac{y - 9}{x + 4}$$

$$-1(x + 4) = y - 9$$

$$-x - 4 = y - 9$$

$$y = mx + b$$

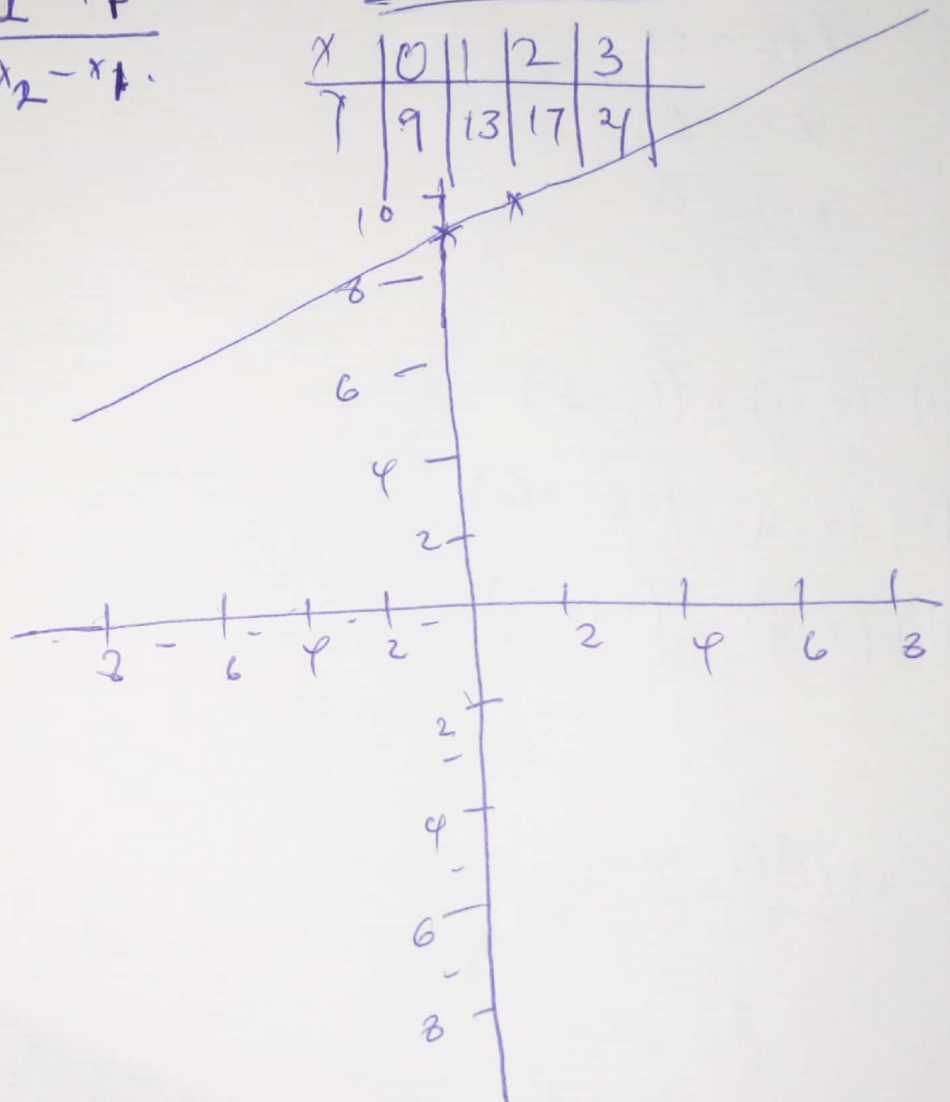
$$\text{or } y = -x + b$$

$$y = -1(-4) + 9$$

$$y = 4x + 9$$

$$y = 4x + 9$$

x	0	1	2	3
y	9	13	17	21



④ x = degrees celcius

y = degrees fahrenheit

$$100^{\circ}\text{C} \leftrightarrow 212^{\circ}\text{F} \quad (100, 212)$$

$$x_2 \quad y_2$$

$$0^{\circ}\text{C} \leftrightarrow 32^{\circ}\text{F} \quad (0, 32)$$

$$y = mx + b$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{212 - 32}{100 - 0}$$

$$= \frac{180}{100}$$

$$= 1.8$$

$$y = 1.8x + 32$$

$$1.8x + 32 = 0$$

$$1.8x = -32$$

$$x = \frac{-32}{1.8}$$

$$x = -17.8$$

Use the equation to convert 80°F to degrees celcius

$$y = 1.8x + 32$$

$$80 = 1.8x + 32$$

$$1.8x = 80 - 32$$

$$x = \frac{80 - 32}{1.8}$$

$$= 26.7^{\circ}\text{C}$$

Your Ref:

①. Evaluate the function given value of the independent variable. simplify the results.

$$f(x) = x^3$$
$$\frac{f(x+\Delta x) - f(x)}{\Delta x} \quad (\Delta x \neq 0)$$

$$\text{let } - [(x+\Delta)^3 - x^3] / \Delta$$

$$= (x^3 + 3x^2\Delta + 3x\Delta^2 + \Delta^3 - x^3) / \Delta$$

$$= (3x^2\Delta + 3x\Delta^2 + \Delta^3) / \Delta$$

$$= 3x^2 + 3x\Delta + \Delta^2$$

take the limit $\Delta \rightarrow 0$

$$= \underline{\underline{3x^2}}$$

$$b) f(x) = \sqrt{x} \text{ or } f(x) = x^{\frac{1}{2}} \text{ or } x^{-2}$$

$$g(x) = x^2 - 25$$

$$(b) g(f(5))$$

$$(c) f(g(5))$$

$$c) g(f(0))$$

$$d) f(g(-6))$$

$$e) f(g(x))$$

$$f) g(f(x))$$

$$f \circ g(x) = f(g(x))$$

$$a) = f(g(5))$$

$$= x^{-2}(x^2 - 25)$$

$$= x^{-2}(5^2 - 25)$$

$$= \underline{\underline{0}}$$

$$b) g(f(5))$$

$$(x^2 - 25)x^{\frac{-2}{2}}$$

$$(x^2 - 25)^{\frac{1}{2}}$$

$$(x^2 - 25)^{\frac{1}{2} \cdot 2}$$

$$(x^2 - 25)^1$$

$$c) g(f(0))$$

$$x^2 - 25(x^{-2})$$

$$x^2 - 25(0)$$

$$= \underline{\underline{0}}$$

$$d) f(g(-6))$$

$$x^{-2}(x^2 - 25)$$

$$x^{-2}(-6^2 - 25)$$

$$x^{-2}(36 - 25)$$

$$9x^{-2}$$

$$= \frac{1}{9}x^2$$

$$= \underline{\underline{\frac{1}{9}x^2}}$$

$$e) f(g(x))$$

$$x^{-2}(x^2 - 25)$$

$$x^0 - 25$$

$$= \underline{\underline{25}}$$

Your Ref.

$$f) g'(x)$$
$$(x^2 - 25) x^{-2}$$

$$= -25$$
$$\underline{\underline{\quad}}$$

⑦ Convert the degree measure to radian measure as a multiple of π and as a decimal rounded to three decimal places.

(a) 30° , b) 210° , c) 225° , d) 120° multiple of π .

$$1 \pi \text{ rad} = 180^\circ$$

$$\frac{1}{2} \pi \text{ rad} = 90^\circ$$

$$2 \pi \text{ rad} = 360^\circ$$

$$2 \text{ rad} = 114.5916^\circ$$

$$1 \text{ rad} = 57.2958^\circ$$

$$\text{radians} = \text{degrees} \times \frac{\pi}{180}$$

$$a) 30 \times \frac{3.142}{180} = 0.524$$

$$b) 210 \times \frac{3.142}{180} = 3.666$$

$$c) 225 \times \frac{3.142}{180} = 3.928$$

$$d) = 120 \times \frac{3.142}{180} = 2.095$$

Your Ref:

(8) find two solutions of each equation. Give your answers in radians ($0 \leq \theta < 2\pi$)
enter your answers as a comma separated lists.

$$(a) \cos \theta = \frac{1}{2}$$

$$(b) \cos \theta = -\frac{1}{2}$$

$$\cos(2x) = -\frac{1}{2}$$

$$\therefore \cos(240) = -\cos(60)$$

$$= 240 - 180 = 30^\circ$$

$$\therefore 240 \times \frac{2\pi}{180}$$

$$(b) \frac{30 \times 3.142}{180} = 0.524$$

$$(a) \frac{60 \times 3.142}{180} = \underline{\underline{1.047}}$$

(9) Solve the equation for θ where.

$$0 \leq \theta \leq 2\pi$$

$$2 \sin^2(\theta) = 1 \quad \Rightarrow \sin \theta = \pm \frac{1}{\sqrt{2}}$$

$$\frac{2 \sin^2 \theta}{2} = \frac{1}{2}$$

$$\sqrt{\sin^2 \theta} = \sqrt{\frac{1}{2}}$$

$$\sin \theta = \pm \frac{1}{\sqrt{2}}$$

OR $\theta = \frac{\pi}{4}, \frac{3\pi}{4}$

(10) Solve

$$2 \cos^2(\theta) - \cos \theta = 1$$

$$y = ax^2 + bx + c \quad a \neq 1$$

$$(2 \cos^2 \theta - 2 \cos \theta) + (\cos \theta - 1) = 0$$

$$2 \cos \theta (\cos \theta - 1) + 1 (\cos \theta - 1) = 0$$

$$(2 \cos \theta + 1)(\cos \theta - 1) = 0$$

$$\cos \theta = -\frac{1}{2} \text{ and } \cos \theta = 1$$

Special angles = $120^\circ, 240^\circ$ and 0°