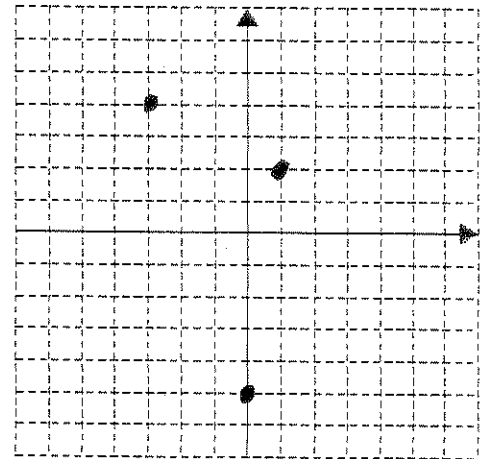


Key

Show all work. Simplify all answers. Leave all answers exact (reduced fractions not rounded decimals – unless otherwise indicated).

Plot the points (1,2), (-3,4), (0,-5)



Find the distance between the points (-1,2), (-6,-4)

$$\sqrt{(-1-(-6))^2 + (2-(-4))^2} = \sqrt{5^2 + 6^2} = \sqrt{25+36} = \sqrt{61}$$

$$\sqrt{(-6-(-1))^2 + (-4-2)^2}$$

Find the midpoint between the points (1,-2), (-6,4)

$$\left(\frac{-5}{2}, \frac{2}{2} \right)$$

$$\left(\frac{1-6}{2}, \frac{-2+4}{2} \right)$$

$$\left(\frac{-5}{2}, 1 \right)$$

$$\left(\frac{-6+1}{2}, \frac{4-2}{2} \right)$$

Find the x and y intercepts of the line $y = 3x - 2$

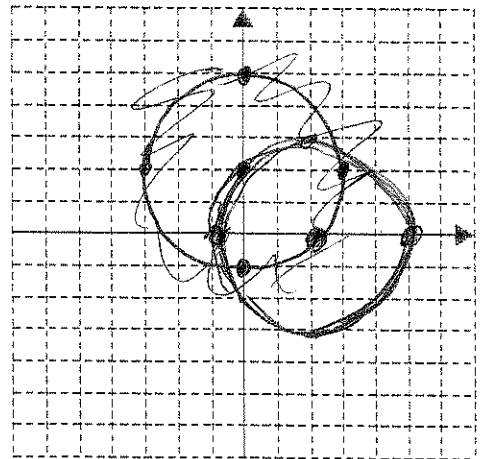
x-intercept:

$$\left(\frac{2}{3}, 0 \right)$$

y-intercept:

$$(0, -2)$$

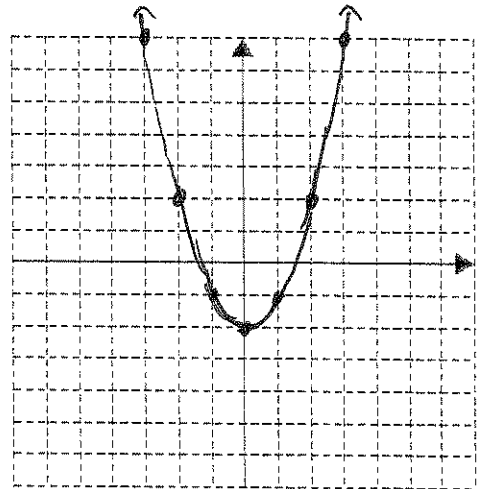
Graph the circle: $(x-2)^2 + y^2 = 9$



Write the equation of a circle with center $(2, -3)$ and radius 4

$$(x-2)^2 + (y+3)^2 = 16$$

Graph $f(x) = x^2 - 2$



For the function $f(x) = x - x^2$ find $f(-4)$ and $f(2)$

$$f(-4) = -4 - 16 = -20$$

$$f(2) = 2 - 4 = -2$$

For the function $f(x) = x - x^2$ find $f(w-2)$

$$\begin{aligned} f(w-2) &= w-2 - (w-2)^2 \\ &= w-2 - (w^2 - 4w + 4) \\ &= w-2 - w^2 + 4w - 4 \\ &= -w^2 + 5w - 6 \end{aligned}$$

Find the domain of each of the following: $g(x) = x - x^2$

all \mathbb{R}

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

$$x \neq 2$$

$$k(x) = \sqrt{2x+5}$$

$$2x+5 \geq 0$$

$$2x \geq -5$$

$$x \geq -\frac{5}{2}$$

Find the slope of the line $2x + 3y = 8$

$$3y = -2x + 8$$

$$y = -\frac{2}{3}x + \frac{8}{3}$$

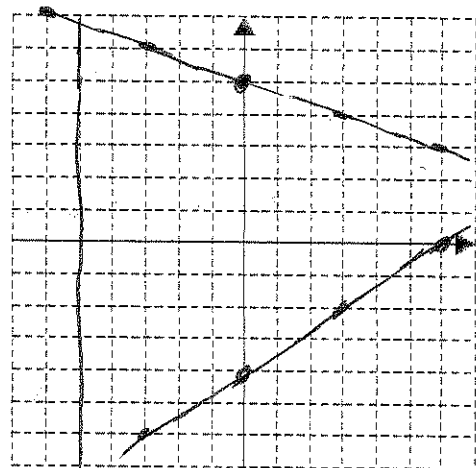
$$-\frac{2}{3}$$

Graph each of these lines:

$$2x - 3y = 12$$

$$y = -\frac{1}{3}x + 5$$

$$x = -5$$



Find the equation of the line through $(-2, -3)$ and $(4, 1)$.

$$\frac{-3-1}{-2-4} \quad \text{or} \quad \frac{1+3}{4+2}$$

$$m = \frac{4}{6} = \frac{2}{3}$$

$$y - 1 = \frac{2}{3}(x - 4)$$

$$y = \frac{2}{3}x - \frac{8}{3} + 1$$

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

Find the equation of the line that is perpendicular to $3y = 5 - 2x$ and goes through $(-1, 0)$

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

$$\perp \quad m = \frac{3}{2}$$

$$y - 0 = \frac{3}{2}(x + 1)$$

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

Solve the equation: $6x + 7 = 3$

sub 4
div 4
simp 2

$$6x = -4$$

$$x = -\frac{4}{6} = -\frac{2}{3}$$

3 sides

Solve the equation: $\frac{2}{3}x - \frac{1}{2} = x + \frac{5}{3}$

$$4x - 3 = 6x + 10$$

$$-13 = 2x$$

$$x = -\frac{13}{2}$$

$$\frac{2}{3}x - x = \frac{5}{3} + \frac{1}{2}$$

$$-\frac{1}{3}x = \frac{10}{6} + \frac{3}{6}$$

$$-\frac{1}{3}x = \frac{13}{6}$$

$$x = -\frac{13}{2}$$

2 com den

3 add

2 divide

The retail price of jeans is calculated by adding 30% to the wholesale price. What is the wholesale price of a pair of jeans that has a retail price of \$20?

$$20 = w + 0.3w$$

$$20 = 1.3w$$

$$w = \frac{20}{1.3} = \frac{200}{13}$$

$$\begin{array}{r} 15.3846... \\ 13 \overline{) 200} \\ \underline{13} \\ 70 \\ \underline{65} \\ 509 \\ \underline{39} \\ 1104 \\ \underline{104} \\ 6 \end{array}$$

Solve $7 - 3x \leq 5$ and write the solution in interval notation.

$$-3x \leq -2 \quad 3$$

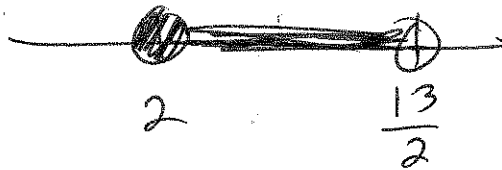
$$x \geq \frac{2}{3} \quad 3$$

$$\left[\frac{2}{3}, \infty \right) \quad 4$$

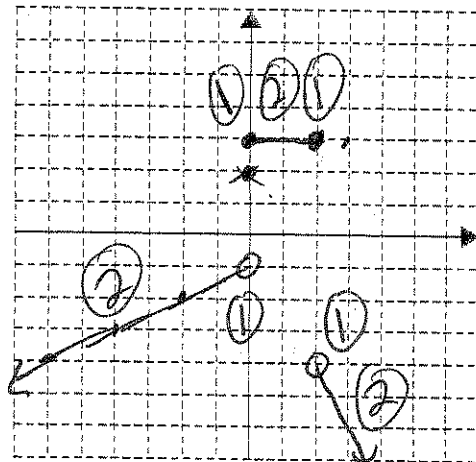
Solve $-4 \leq 2x - 8 < 5$ and graph the solution on a number line.

$$4 \leq 2x < 13$$

$$2 \leq x < \frac{13}{2}$$



Graph the function $f(x) = \begin{cases} \frac{1}{2}x - 1 & \text{for } x < 0 \\ 3 & \text{for } 0 \leq x \leq 2 \\ -2x & \text{for } x > 2 \end{cases}$



For the functions $f(x) = 3x - 6$ and $g(x) = x - 3x^2$ find $(g - f)(x)$.

$$\begin{aligned}
 g - f &= x - 3x^2 - 3x + 6 \\
 &= -3x^2 - 2x + 6
 \end{aligned}$$

For the functions $f(x) = 2x - 7$ and $g(x) = x - 3x^2$ find $(f \cdot g)(x)$.

$$\begin{aligned}
 f \cdot g &= (2x - 7)(x - 3x^2) \\
 &= 2x^2 - 6x^3 - 7x + 21x^2 \\
 &= -6x^3 + 23x^2 - 7x
 \end{aligned}$$

For the function $f(x) = 7x - 2$ calculate the difference quotient: $\frac{f(x+h) - f(x)}{h}$

$$\begin{aligned}
 &\frac{7(x+h) - 2 - 7x + 2}{h} \\
 &= \frac{7x + 7h - 2 - 7x + 2}{h} \\
 &= \frac{7h}{h} \\
 &= 7
 \end{aligned}$$

- ① $7x$
- ① 2
- ① h

$$\frac{7h}{h}$$

$$7$$