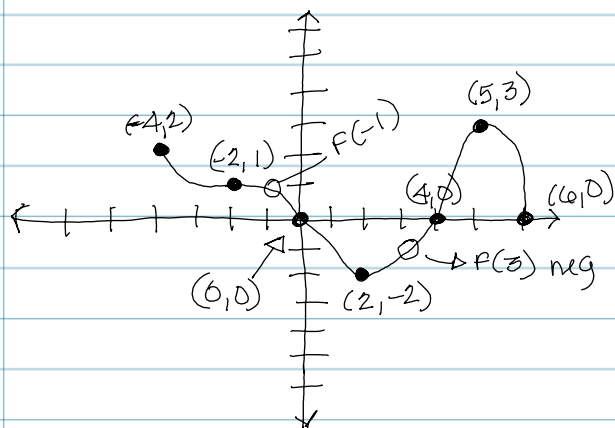


SECTION 3.2

↳ GRAPHS



(a) Find $f(0)$ and $f(6)$

$$f(0) = 0 \quad (0, 0)$$

$$f(6) = 0$$

(b) Find $f(2)$ and $f(-2)$

$$f(2) = -2 \quad (2, -2)$$

$$f(-2) = 1 \quad (-2, 1)$$

(c) Is $f(3)$ positive or neg.?

$$f(3) = -1 \text{ "negative"}$$

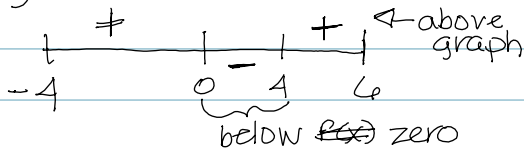
(d) Is $f(-1)$ positive or neg.?

$$f(-1) = 1 \text{ "positive"}$$

(e) What values of x is $f(x) = 0$?

$$0, 4, 6$$

(f) For what values of x is $f(x) < 0$?



$$(0, 4) \text{ x's interval}$$

$$\text{EX! } f(x) > 0$$

$$[-4, 0) \cup (4, 6)$$

↑ not on the axis
↑ on the axis

(g) What is the domain of f ?
 $D = X \quad [-4, 6]$

(h) What is the range of f ?
 $R = Y \quad [-2, 3]$

(i) What are the x -intercepts? ($y=0$)
 $0, 4, 6$

(j) What is the y -intercept? ($x=0$)
 0

(k) How often does the line $y = -1$ intersect the graph?

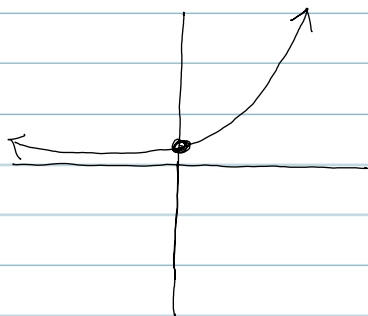
"2" $y = -1$ (horizontal)

(l) How often does the line $x = 1$ intersect the graph?
"1" $x = 1$

(m) For what values of x does $f(x) = 3$?
 $(x, 3)$
 $x = 5$

(n) For what values of x does $f(x) = -2$?
 $x = 2$

12.



(x)
(a) domain: \mathbb{R} or $(-\infty, \infty)$
range: $(0, \infty)$
(y)

(b) Intercepts?
y-int $\rightarrow 1$
(0, 1)

(c) symmetry x no
y no
Origin no

24 $f(x) = -3x^2 + 5x$ ↷

(a) Is the point $(-1, 2)$ on the graph of f ?

$$\begin{aligned} f(-1) &= -3(-1)^2 + 5(-1) \\ &= -3(1) - 5 \\ &= -8 \neq 2 \end{aligned} \quad \text{NO}$$

(b) If $x = -2$, what is $f(x)$? What point is on the graph of f ?

$$\begin{aligned} f(-2) &= -3(-2)^2 + 5(-2) \\ &= -3(4) - 10 \\ &= -22 \end{aligned} \quad \begin{matrix} x & y \\ (-2, & -22) \end{matrix}$$

(c) If $f(x) = -2$, what is x ?

$$\begin{aligned} -2 &= -3x^2 + 5x \\ 0 &= -3x^2 + 5x + 2 \quad (\text{change neg sign}) \end{aligned}$$

$$\begin{aligned} 0 &= 3x^2 - 5x - 2 \\ 0 &= (3x + 1)(x - 2) \end{aligned}$$

$$3x + 1 = 0 \quad x - 2 = 0$$

$$3x = -1$$

$$x = -\frac{1}{3} \quad x = 2$$

$$\begin{matrix} (-\frac{1}{3}, -2) & (2, -2) \end{matrix}$$

* BOTTOMS UP METHOD :

$$3x^2 - 5x - 2 = 0$$
$$x^2 - 5x - 6 \quad \leftarrow 3 \cdot 2$$
$$(x - 6)(x + 1)$$

$$\left(\frac{x-6}{3}\right) \left(x + \frac{1}{3}\right)$$

$$\left(\frac{x-2}{1}\right) \left(x + \frac{1}{3}\right)$$

$$(x-2)(3x+1)$$

(d) what is the domain of f?

$$f(x) = -3x^2 + 5x$$

$\left(\frac{5}{6}, \frac{25}{12}\right)$

D: \mathbb{R}

Range? find vertex

$$h = \frac{-b}{2a} = \frac{-5}{2(-3)} = \frac{5}{6}$$

$$k = -3\left(\frac{5}{6}\right)^2 + 5\left(\frac{5}{6}\right) = 2.0833$$

$\frac{25}{12} \leftarrow = 2.0833$

$\left(-\infty, \frac{25}{12}\right]$

(e) List the x-intercepts.

(y=0)

$$0 = -3x^2 + 5x$$

$$0 = x(-3x + 5)$$

$x = 0$

$$-3x + 5 = 0$$

$$-3x = -5$$

$$x = +\frac{5}{3}$$

(f) List the y-intercepts. ($x=0$)

$$\begin{aligned} f(0) &= -3(0)^2 + 5(0) \\ &= 0 \end{aligned}$$