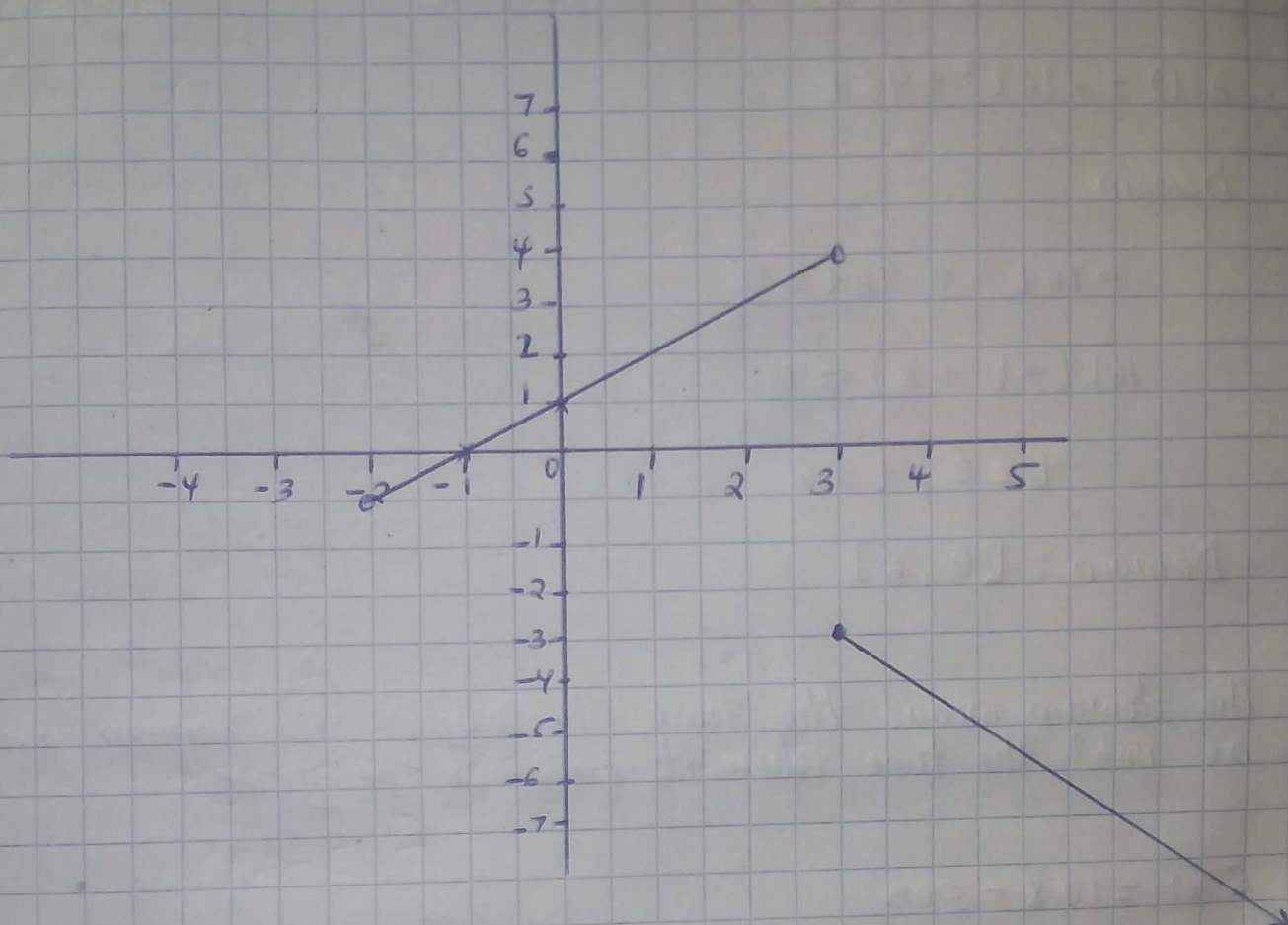




$$12. H(x) = \sqrt[3]{5x^2 - 3x}, \quad (f \circ g)(x) = H(x)$$

$$g(x) = 5x^2 - 3x$$

$$f(x) = \sqrt[3]{x}$$

$$21. \text{ Increasing} = (-\infty, -1) \cup (1, \infty)$$

$$22. \text{ Decreasing} = (-1, 1)$$

$$23. \text{ Local minimum} = \text{---} (1, -0.8)$$

$$24. \text{ Local maximum} = (-1, 0.7)$$

REAL LIFE FUNCTIONS

60. $h(t) = -16t^2 + 96t$

Domain

$$-16t^2 + 96t = 0$$

$$16t(-t + 6) = 0$$

$$t = 0, t = 6$$

$$\text{Domain: } [0, 6]$$

The domain means the time the object is thrown in the air until the time when it falls on the ground.

61. $C(x) = 10x + 500$

(a) Fixed cost: $C(0) = 10(0) + 500$
 $= 500$ dollars

(b) $C(25) = 10(25) + 500$
 $= 250 + 500$
 $= 750$ dollars

(c) $1500 = 10x + 500$
 $10x = 1000$
 $x = 100$

$$\text{Domain: } [0, 100]$$

$$\text{Range: } [500, 1500]$$

26. (a) between 2001 and 2002

$$= \frac{243 - 233}{2002 - 2001} = 10 \text{ millions of dollars/year}$$

(b) between 2001 and 2004

$$= \frac{249 - 243}{2004 - 2001} = \frac{6}{3} = 2 \text{ millions of dollars/year}$$

27 (a) between 2002 and 2004

$$= \frac{77 - 83}{2004 - 2002} = \frac{-6}{2} = -3 \text{ millions of dollars/year}$$
$$= -3$$

The population is decreasing by 3000 per year

b) between 2002 and 2008

$$= 243 +$$

$$= \frac{85 - 83}{2008 - 2004} = \frac{2}{4} = 0.5$$

The population is increasing by 1250 per year.