

### Unit 3

(49) 1<sup>st</sup> year:  $27000 \cdot 0.8 = 21600$

2<sup>nd</sup> year:  $21600 \cdot 0.85 = \boxed{18360}$

(50)  $g(f(x)) = g(x-2) = \frac{(x-2)-2}{4} = \frac{x-4}{4} = \frac{x}{4} - 1 = \frac{1}{4}x - 1$

The graph is a line with y-intercept  $-1$  & slope  $\frac{1}{4}$ .  $\boxed{C}$

(51)  $f(x) = 3x - 2$

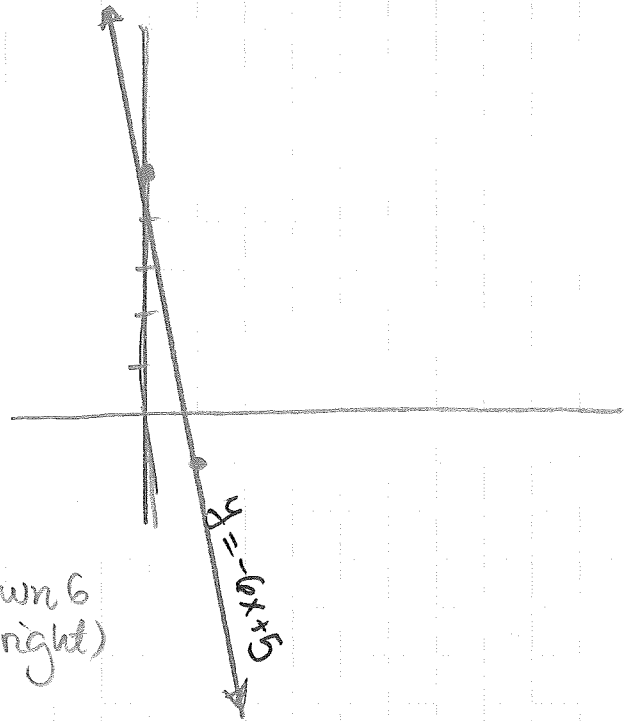
$g(x) = 1 - 2x$

$g(f(x)) = g(3x - 2)$   
 $= 1 - 2(3x - 2)$

$= 1 - 6x + 4$

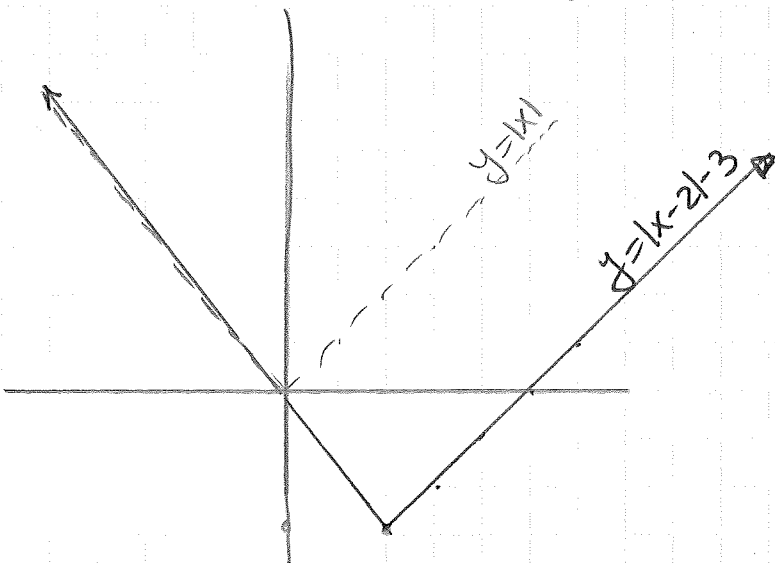
$g(f(x)) = -6x + 5$

↑  
y-intercept 5  
slope  $-6$  (move down 6 unit, 1 right)



(52)  $f(x) = |x - 2| - 3$

start with the graph of  $y = |x|$  move it 3 units down & 2 to the right



53 see answers

55 A

54  $3 \left| \frac{x+4}{2} \right| = 15$

divide by 3  
both sides:  $\left| \frac{x+4}{2} \right| = 5$

remove the  
absolute  
value:  $\frac{x+4}{2} = 5$  or  $-5$

multiply  
by 2  
both sides:  $x+4 = 10$  or  $-10$

minus 4  
from both  
sides:  $x = 6$  or  $-14$

$$f(x) = | -x+1 |$$
$$= | -(x-1) |$$
$$= | x-1 |$$

is the graph  $y = |x|$  translated  
1 unit to the right, so  
choice (A)

56  $f(x) = x^2 + 3x + 16$

$$f(3) = 3^2 + 3 \cdot 3 + 16$$
$$= 9 + 9 + 16$$
$$= 34$$

57  $h(x) = 4 \rightarrow (\dots, 4)$   $x$  must be 3.

$h(x) = 6 \rightarrow (\dots, 6)$   $x$  must be 5.

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

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

$$= 2 \cdot 9 + 9 + 3$$

$$= 18 + 9 + 3$$

$$= 30$$

$$f(1) = 2(1)^2 - 3(1) + 3$$

$$= 2 - 3 + 3$$

$$= 2$$

59-66 see answers

67 Domain: (x values)  $\{-1, 2, 3\}$

$h$  is a function because each  $x$  has only one  $y$  value. (C)

68  $g(x) = \frac{x^2 - 6x + 3}{x+4}$   $g(-2) = \frac{(-2)^2 - 6(-2) + 3}{-2+4} = \frac{4+12+3}{2} = \frac{19}{2} = 9\frac{1}{2}$  (B)

$$(69) \quad -4y + 2x = 8$$

• Find the x- & y- intercepts

$$\text{if } x=0, \quad -4y=8 \quad y=-2 \quad (0, -2)$$

$$\text{if } y=0 \quad 2x=8 \quad x=4 \quad (4, 0)$$

**D**

$$(70) \quad y = |x+2| - 3 \quad \rightarrow \text{ move } y = |x| \quad \begin{array}{l} 3 \text{ units down} \\ 2 \text{ units left} \end{array}$$

vertex is  $(-2, -3)$

**B**

(71)

$$18 = 3|4x-10|$$

$$6 = |4x-10|$$

divide  
by 3  
remove  
absolute  
value

$$4x-10 = 6 \quad \text{or} \quad -6$$

$$\text{add } 10 : \quad 4x = 16 \quad \text{or} \quad 4$$

divide by 4:

$$x = 4 \quad \text{or} \quad 1$$

**B**

$$(72) \quad |x-3| + 10 = 2$$

$$\text{minus } 10 : \quad |x-3| = -8$$

no solution.

(absolute value of any number must be positive)

**D**