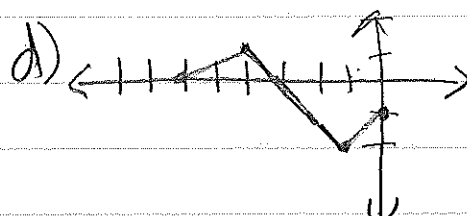
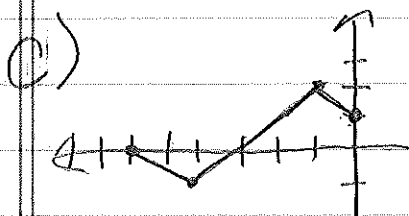
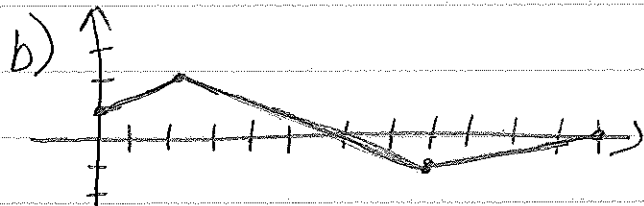
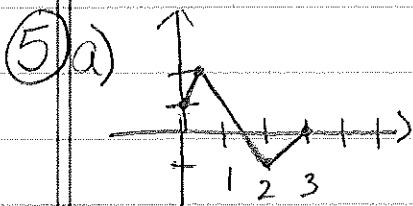
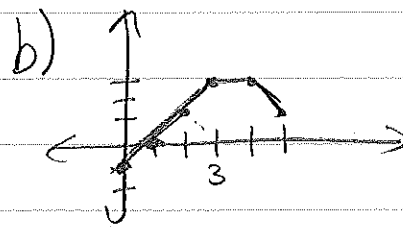
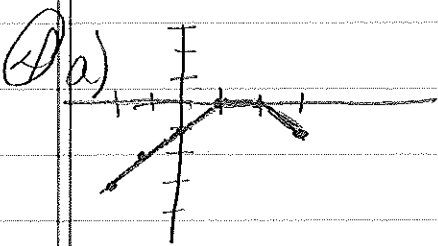


Sec 1.3 page 43 (aceg, 2, 3, 4ab, 5, 7, 9-13, 15, 16, 18, 19, 29, 31, 50, 51)

- ① a) $y = f(x) + 3$
 c) $y = f(x - 3)$
 e) $y = -f(x)$
 g) $y = 3f(x)$

- ② a) 8 units upward
 b) 8 units left
 c) stretched vertically by a factor of 8
 d) shrink horizontally by a factor of 8
 e) reflect @ x-axis, move down one
 f) stretched horizontally and vertically by a factor of 8.

- ③ a) 3 b) 1 c) 4 d) 5 e) 2

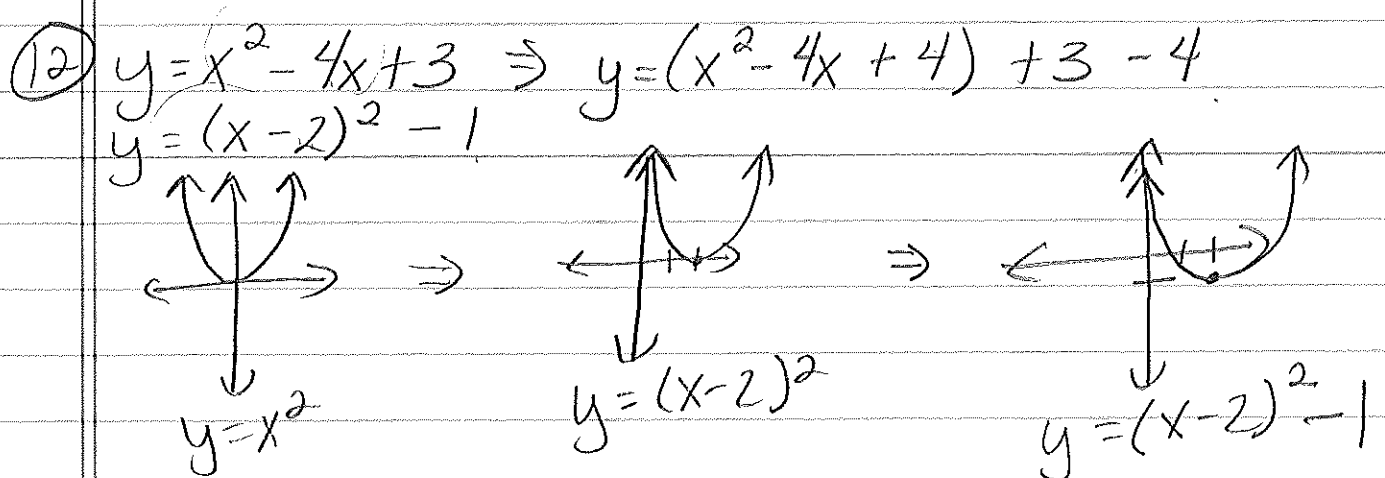
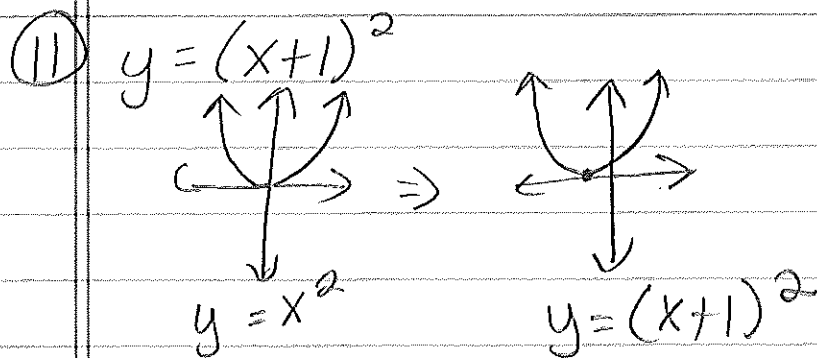
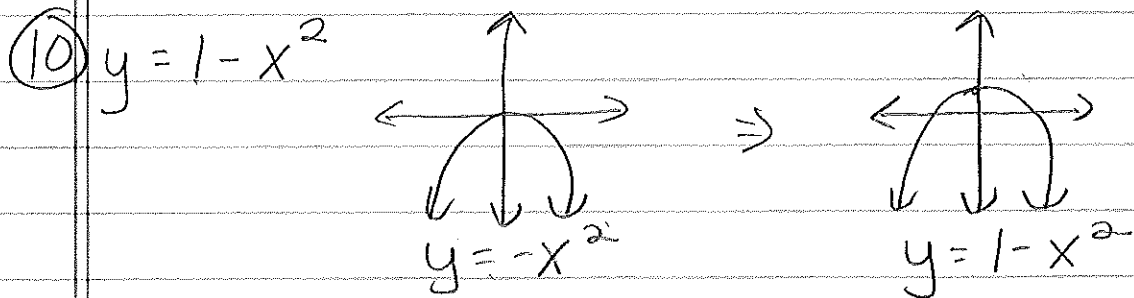
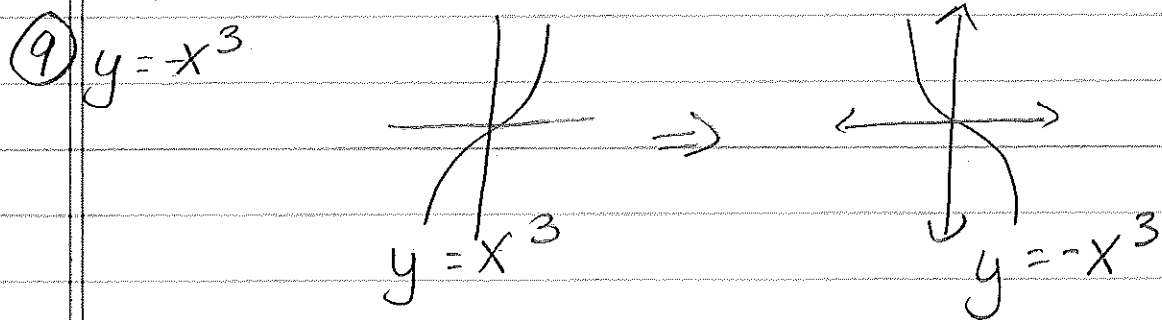


$$\textcircled{7} \quad y = -f(x+4) - 1$$

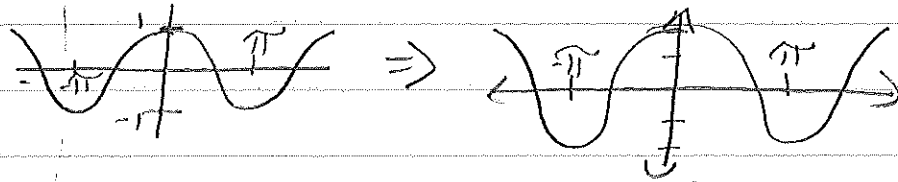
$$\Rightarrow y = -\sqrt{3(x+4) - (x+4)^2} - 1$$

$$y = -\sqrt{3x+12 - x^2 - 8x - 16} - 1$$

$$\boxed{y = -\sqrt{-x^2 + 5x - 4} - 1}$$

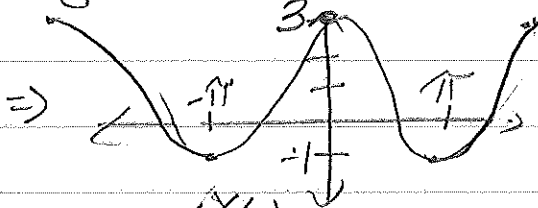


⑬ $y = 1 + 2 \cos x$

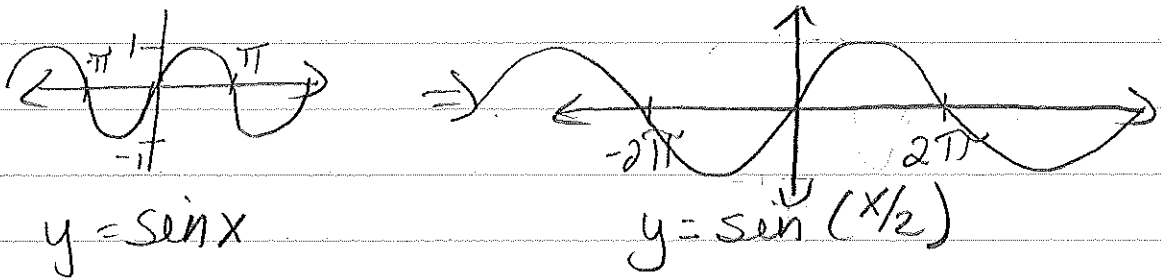


$y = \cos x$

$y = 2 \cos x$



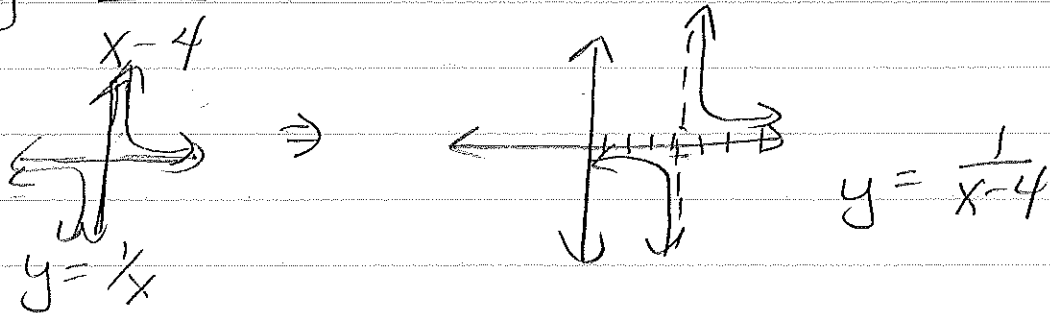
⑮ $y = \sin(x/2)$



$y = \sin x$

$y = \sin(x/2)$

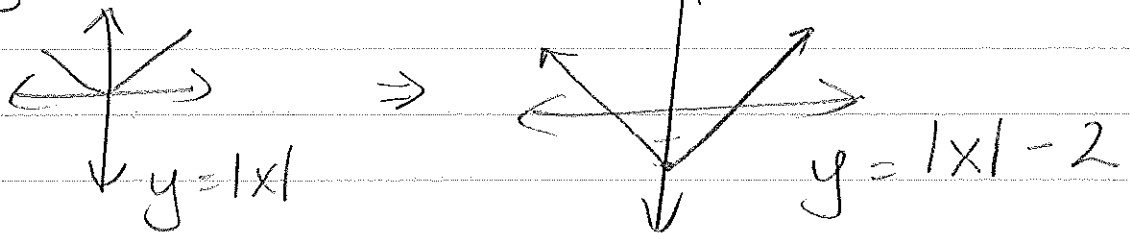
⑯ $y = \frac{1}{x-4}$



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

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

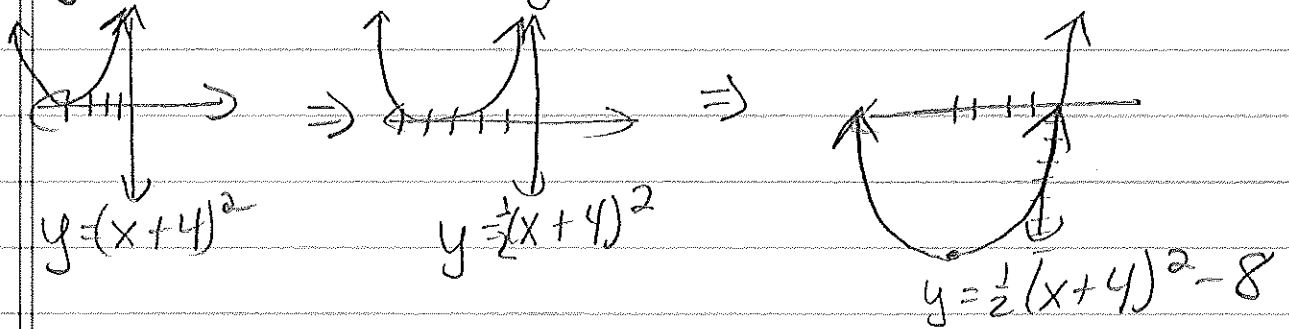
⑰ $y = |x| - 2$



$y = |x|$

$y = |x| - 2$

$$(19) y = \frac{1}{2}(x^2 + 8x) \Rightarrow y = \frac{1}{2}(x+4)^2 - 8$$



$$(29) f(x) = x^3 + 2x^2, g(x) = 3x^2 - 1$$

$$a) f+g = \boxed{x^3 + 5x^2 - 1} \quad D = \mathbb{R}$$

$$b) f-g = \boxed{x^3 - x^2 + 1} \quad D = \mathbb{R}$$

$$c) fg = \boxed{3x^5 + 6x^4 - x^3 - 2x^2} \quad D = \mathbb{R}$$

$$d) \frac{f}{g} = \boxed{\frac{x^3 + 2x^2}{3x^2 - 1}} \quad D = (-\infty, -\frac{1}{\sqrt{3}}) \cup (-\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}) \cup (\frac{1}{\sqrt{3}}, \infty)$$

$$(3) f(x) = x^2 - 1 \quad g(x) = 2x + 1$$

$$a) f \circ g = f(g(x)) = (2x+1)^2 - 1 = \boxed{4x^2 + 4x, D = \mathbb{R}}$$

$$b) g \circ f = g(f(x)) = 2(x^2 - 1) + 1 = \boxed{2x^2 - 1, D = \mathbb{R}}$$

$$c) f \circ f = f(f(x)) = (x^2 - 1)^2 - 1 = \boxed{x^4 - 2x^2, D = \mathbb{R}}$$

$$d) g \circ g = g(g(x)) = 2(2x+1) + 1 = \boxed{4x + 3, D = \mathbb{R}}$$

$$(50) a) f(6) = 5 \quad b) g(3) = 2 \quad c) f(3) = 4$$

$$d) g(6) = 3 \quad e) g(4) = 1 \quad f) f(3) = 4$$

$$(51) a) f(5) = 4 \quad b) g(0) = 3 \quad c) f(3) = 0$$

$$d) \text{DNE} \quad e) g(1) = 4 \quad f) f(2) = -2$$