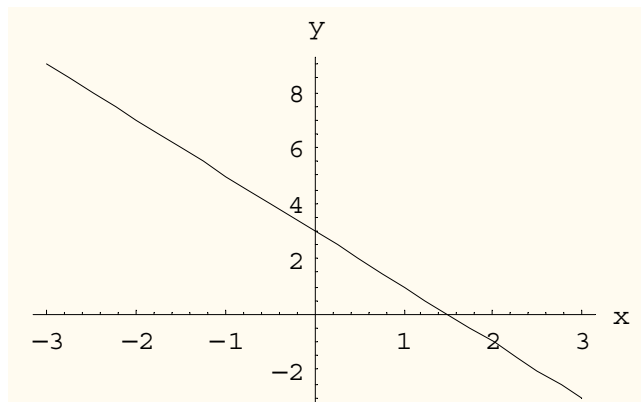
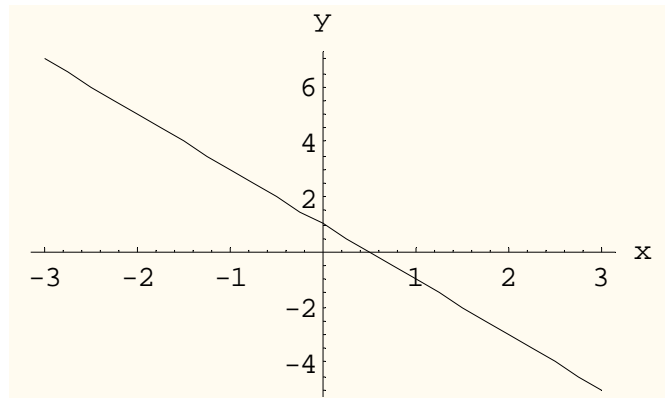


Algebra
Post-test – Answers

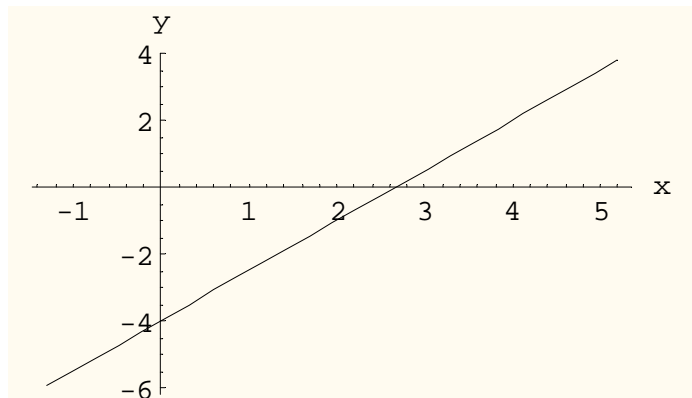
1. $f(0) = -6$, $f(-2) = -22$, $f(2+h) = -2h^2 - 4h - 6$.
2. $g(0) = \frac{1}{6}$, $g(-2) = -\frac{3}{20}$, $g(3)$ does not exist; the denominator is 0 at $x = 3$;
division by 0 is not defined.
3. a. (2) is not the graph of a function; (2) fails the vertical line test.
b. (3) is the graph of a one-to-one function.
c. (1) appears to be the graph of a quadratic function.
4. a. $a_n = \frac{2n}{2n+1}$ b. $a_n = \frac{(-1)^n n}{(n+1)^2}$
5. a. Can be arithmetic; common difference: $d = -3$; $a_4 = -10$, $a_5 = -13$.
b. Neither arithmetic nor geometric.
c. Can be geometric; common ratio: $r = -2$; $a_4 = -16$, $a_5 = 32$.
d. Can be geometric; common ratio: $r = \frac{1}{3}$; $a_4 = \frac{1}{54}$, $a_5 = \frac{1}{162}$.
6. Slope $m = -2$, y -intercept 3.



7. Slope $m = -2$, $y - 3 = -2(x + 1)$ (point - slope form).



8. $3x - 2y - 8$; slope: $m = \frac{3}{2}$, x -intercept: $\frac{8}{3}$, y -intercept: -4 .



9. a.

$$\begin{vmatrix} 1 & -2 \\ -2 & 4 \end{vmatrix} = 0, \text{ the lines are either parallel or coincident.}$$

$$x - 2y = 4 \text{ implies } y = \frac{1}{2}x - 2,$$

$$-2x + 4y = -8 \text{ implies } y = \frac{1}{2}x - 2; \text{ the lines are coincident.}$$

b. $\begin{vmatrix} 2 & -1 \\ 5 & 2 \end{vmatrix} = 9$; the lines have a unique point of intersection $(2, -1)$.

c.

$$\begin{vmatrix} 2 & 1 \\ 4 & 2 \end{vmatrix} = 0, \text{ the lines are either parallel or coincident.}$$

$$2x + y = 4 \text{ implies } y = -2x + 4,$$

$$4x + 2y = -8 \text{ implies } y = -2x - 4; \text{ the lines are parallel.}$$

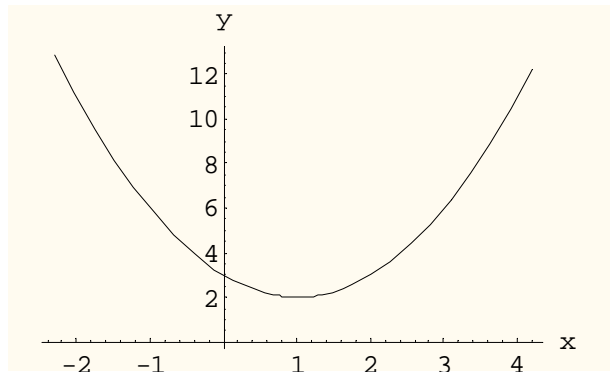
10. Interest rate: $r = 0.06$ or 6%; amount in account 3 years from now: \$1780

11. a. $x^2 - 5$, b. $x^2 + 4x - 12$, c. $6x^2 + 11x + 3$.

12. a. $x^2 - 3 = (x - \sqrt{3})(x + \sqrt{3})$, b. $x^2 + 8x + 16 = (x + 4)^2$,

c. $x^2 - 6x + 13$ cannot be factored.

13. $f(x) = x^2 - 2x + 3$



vertex: (1,2); x-intercepts: none, y-intercept: 3

14. a. $x = 2 \pm \sqrt{6}$ b. $x = -\frac{1}{3}, \frac{1}{2}$ c. no real solutions.

15. a. $b^2 - 4ac = 0$, b. $b^2 - 4ac > 0$, c. $b^2 - 4ac < 0$.