

Algebra 2 Midterm Review ANSWER KEY

Chapter 9 Review: Sequences and Series

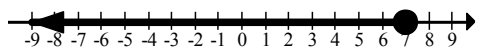
1. Arithmetic ($d = 0.5$)
2. Neither
3. Geometric ($r = 0.5$)
4. $-4, -1, 2, 5$
5. $-5, -2, 1, 4$
6. $a_n = -12 + (n-1)40$ $a_{10} = 348$
7. $a_n = 4(5)^{n-1}$ $a_{10} = 7,812,500$
8. $a_n = 127 + (n-1)(-5)$ $a_{10} = 82$
9. $a_n = 6(-4)^{n-1}$ $a_{10} = -1,572,864$
10. 360
11. huge number: 1,741,425,868
12. 157,305,453
13. $-52, -26$
14. 2585
15. 364
16. 7.5
17. 16,598

Chapter 1 Review: Solving Eqs & Ineqs

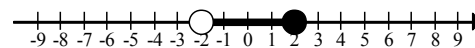
1. a) $a = 6$

b) $x = 2, x = -\frac{8}{3}$

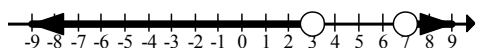
2. a) $x < 7$
(graph below should have open circle)



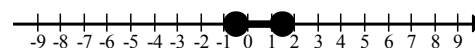
b) $-2 < x \leq 2$



c) $x > 7$ or $x < 3$



d) $-\frac{1}{2} \leq x \leq \frac{3}{2}$



3. C

4. $C = \frac{5}{9}(F - 32)$

5. a. Distributive Property
- b. Commutative Property of Multiplication
- c. Symmetric Property
- d. Inverse Property of Addition

7. Given
Addition Property
Multiplication Property
Substitution Property
Addition Property
Addition Property
Division Property
Symmetric Property

6. -26

8. B, C, D, E

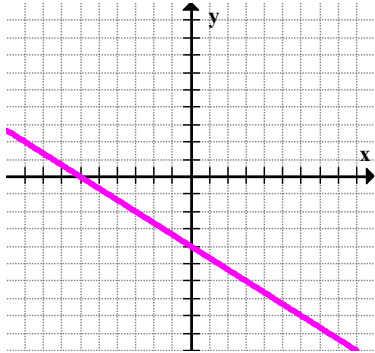
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Chapter 2 Review: Linear Functions

1. a) $y = -\frac{2}{3}x - 4$

Slope = $-\frac{2}{3}$

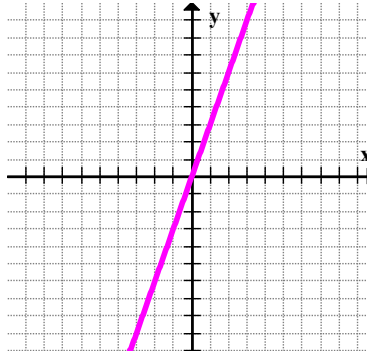
y-int: -4



b) $f(x) = 3x$

Slope = 3

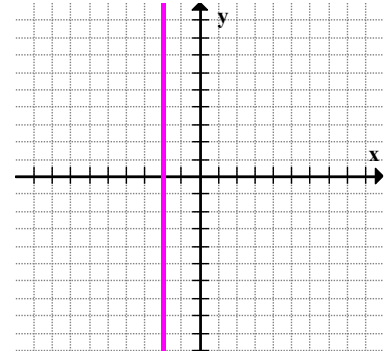
y-int: 0



c) $x = -2$

Slope: undefined

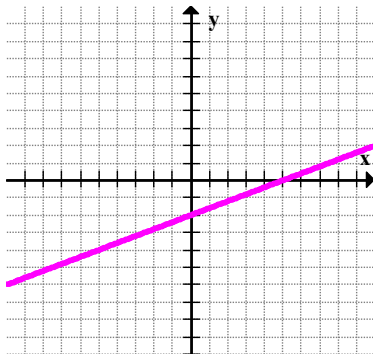
y-int: none



d) $2x - 5y = 10$

Slope: $\frac{2}{5}$

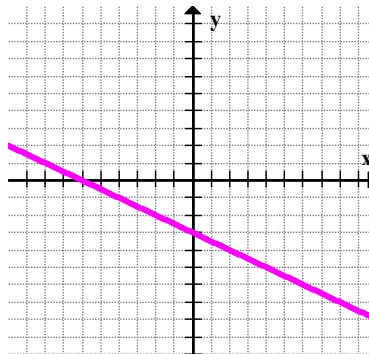
y-int: -2



e) $6y + 3x = -18$

Slope: $-\frac{1}{2}$

y-int: -3



2. x-intercept: -4 y-intercept: 2

3. a) Not a function, x-values repeat

b) Function, passes Vertical Line Test

4. a) $y = \frac{2}{3}x - 3$

b) $y = 4x - 15$

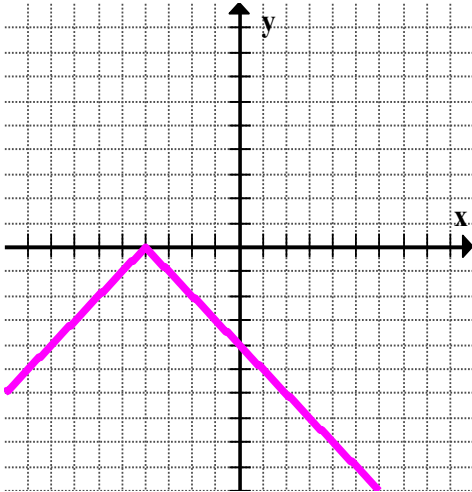
5. $y = -3x + 56$

6. a) $y = \frac{1}{4}x + 0.35$

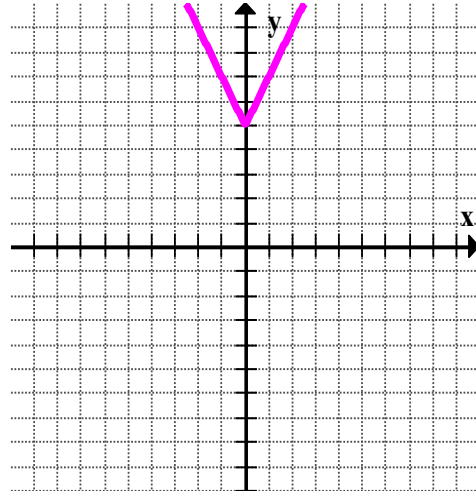
b) 15 ounces

7. shift left 2, shift up 4

8. a) $y = -|x+4|$

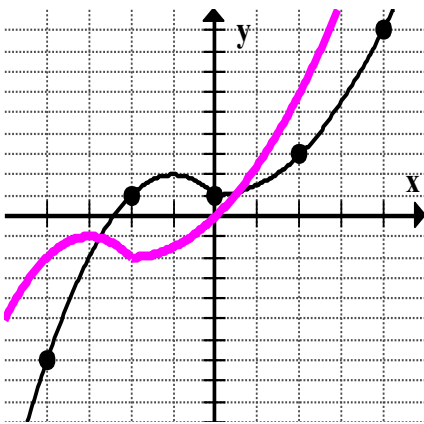


b) $y = 2|x|+5$



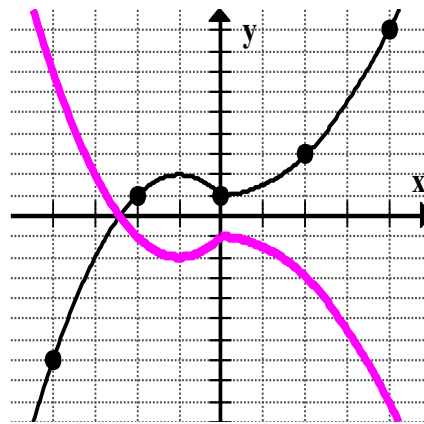
9. a) $g(x) = f(x+2) - 3$

Shift left 2, shift down 3



b) $g(x) = -f(x)$

Reflect in x-axis (or flip graph upside down)



10. a) Positive
 b) $y = 1.71x + 53.57$
 c) 87.77
 d) 3.76

11. a) $y = .375x - 722.25$
 b) 31.5 million

12. a) $\{-5, 1\}$ b) $\left\{-\frac{7}{2}, -2, \frac{3}{2}\right\}$

13. a) Yes, function; Domain: all real numbers; Range: $y \geq 0$
 b) Yes, function; Domain: all real numbers; Range: $y \geq 0$
 c) Not a function; Domain: $-1 \leq x \leq 3$
 Range: $0 \leq y \leq 4$

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Chapter 4 Review: Quadratics

1. a) $y = x^2 - 6x - 7$

$V : (3, -16)$

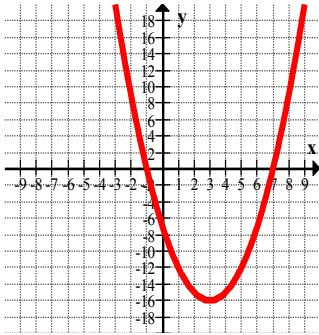
$axis : x = 3$

$x - int : -1 \text{ and } 7$

$y - int : -7$

$D : \{x \mid -\infty \leq x \leq \infty\}$

$R : \{y \mid -16 \leq y \leq \infty\}$



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

$V : (1, 3)$

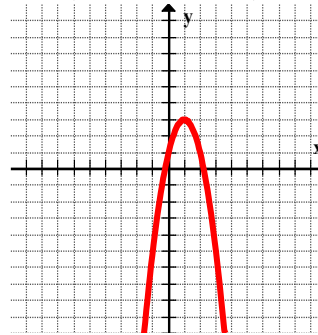
$axis : x = 1$

$x - int : -.22 \text{ and } 2.22$

$y - int : 1$

$D : \{x \mid -\infty \leq x \leq \infty\}$

$R : \{y \mid -\infty \leq y \leq 3\}$



2. a) $(x-14)(x+2)$

d) can't be factored

b) $2(2x-3)(3x+4)$

e) $(4x-5)(x+9)$

c) $9(4x-3)(4x+3)$

3. a) $x = -4, x = -5$

b) $x = -4, x = \frac{1}{3}$

4. $(-2, -6)$

5. $y = x^2 + 3x - 18$

6. $y = -.004x^2 + .352x + .369$

7. a) $x = \frac{1 \pm \sqrt{5}}{2}$

b) $x = \pm 2$

c) $x = 5 \pm \sqrt{38}$

d) $x = \frac{-3 \pm \sqrt{233}}{16}$

8. B

9. a) $-i$

b) 1

c) i

d) 1

10. a) $2 - 5i$

b) $14 + 2i$

c) $\frac{1}{4} - \frac{7}{4}i$

11. a) $x = \pm 9i$

b) $x = \pm i\sqrt{26}$

c) $x = 2 \pm i\sqrt{6}$

d) $x = \frac{-4 \pm i\sqrt{26}}{7}$

12. $(-1, -10)$ and $(4, 30)$

13. $(7, -6)$ and $(-2, 12)$

14. B and D

15. a) 6.94 seconds

b) 236 meters

c) 13.9 seconds