

Ch. 1 packet answers

Day 1:

1. (a) $y = \frac{3}{2}x$ or $y - 3 = \frac{3}{2}(x - 2)$
(b) $x = -2$
(c) $y + 5 = -1(x - 4)$
(d) $y - 2 = \frac{1}{2}(x + 2)$
2. A
3. A
4. B
5. D
6. (a) $D: (-\infty, \infty)$ $R: (-\infty, 4]$
(b) $D: [1, \infty)$ $R: [2, \infty)$
(c) $D: (-\infty, 2) \cup (2, \infty)$ $R: (-\infty, 0) \cup (0, \infty)$
(d) $D: (-\infty, \infty)$ $R: [-3, \infty)$
7. B
8. E
9. (a) neither
(b) even
(c) odd
10. False $f(-x) \neq f(x)$
11. True $f(-x) = -f(x)$
12. (a) $D: (-\infty, \infty)$ $R: [2, \infty)$
(b) $D: (-\infty, 1) \cup (1, \infty)$ $R: (-1, \infty)$
13. $f(x) = \begin{cases} x, & 0 \leq x < 1 \\ -x + 2, & 1 \leq x \leq 2 \end{cases}$ $D: [0, 2]$ $R: [0, 1]$
14. $f(x) = \begin{cases} \frac{1}{2}x, & -2 \leq x \leq 0 \\ -2x + 2, & 0 < x \leq 1 \\ -1, & 1 < x \leq 3 \end{cases}$ $D: [-2, 3]$ $R: [-1, 2)$

Ch. 1 packet Day 2

1. (a) $\frac{5}{2(x+2)}$

(b) $\frac{7-9m}{m-9}$

(c) $\frac{3x+y}{x+y}$

(d) $\frac{n(n+7)}{n+5}$

2. (a) $x = 8, x = -4$

(b) $x = \frac{-5}{2}$

3. (a) No; does not pass horizontal line test

(b) Yes; passes both the horizontal and vertical line test

4. D

5. (a) $f^{-1}(x) = \pm\sqrt{x-1}$

(b) $f^{-1}(x) = \frac{2x+3}{x-1}$

6. E

Ch. 1 packet Day 3

1. C
2. A
3. A
4. B
5. C
6. B
7. $t = 21.972$
8. (a) $D: (1, \infty)$
(b) $R: (-\infty, \infty)$
(c) $x = 2.948$
9. $y = 2xe^x + 1$
10. $t = 11.090$ yrs.
11. (a) 100 *bacteria*
(b) 6394.351 *bacteria*
(c) 1.000 *hours*
(d) $t \approx 1,585$ *hrs.*
12. (a) $A = 6.6e^{\frac{\ln 0.5}{14}t}$
(b) $t \approx 38.115$ *days*
13. e

Ch. 1 packet Day 4

1. (a) $\sin \theta = \frac{8}{17}$

$\csc \theta = \frac{17}{8}$

$\cos \theta = \frac{-15}{17}$

$\sec \theta = \frac{-17}{15}$

$\tan \theta = \frac{-8}{15}$

$\cot \theta = \frac{15}{8}$

(b) $\sin \theta = \frac{-1}{\sqrt{2}}$

$\csc \theta = -\sqrt{2}$

$\cos \theta = \frac{1}{\sqrt{2}}$

$\sec \theta = \sqrt{2}$

$\tan \theta = -1$

$\cot \theta = -1$

(c) $\sin \theta = \frac{7}{\sqrt{53}}$

$\csc \theta = \frac{\sqrt{53}}{7}$

$\cos \theta = \frac{-2}{\sqrt{53}}$

$\sec \theta = \frac{-\sqrt{53}}{2}$

$\tan \theta = \frac{-7}{2}$

$\cot \theta = \frac{-2}{7}$

2. $\tan \theta = \frac{9}{\sqrt{88}}$

3. (a) $x = 8.629$ and 10.220

(b) $x = \frac{\pi}{6}$ and $\frac{5\pi}{6}$

(c) no solution

4. (a) even

(b) odd

(c) odd

(d) odd

5. (a) $A: 2$ $Per: \frac{\pi}{2}$ $ph.sh. \frac{-\pi}{4}$ $v.sh. 3$ $D: (-\infty, \infty)$ $R: [1, 5]$

(b) $A: none$ $Per: \frac{\pi}{3}$ $ph.sh. \frac{-\pi}{3}$ $v.sh. 2$ $D: x \neq \frac{\pi}{6}k$ $R: (-\infty, \infty)$

6. (a) $A: 2$ $Per: \frac{2\pi}{3}$ $ph.sh. none$ $Equation: y = 2\cos(3x)$

(b) (a) $A: 5$ $Per: 4\pi$ $ph.sh. \pi$ $Equation: y = 5\cos(\frac{1}{2}x - \frac{\pi}{2})$

7. False; period = 4π

8. False Amp = $\frac{1}{2}$

9. a

10. d

11. b

12. e

Review Ch. 1

1. (a) $y - 6 = -2(x + 3)$ or $y + 2 = -2(x - 1)$

(b) $y + 3 = \frac{-5}{3}(x + 2)$

(c) $y + 2 = \frac{-2}{7}(x - 4)$

2. (a) $m = -1$

(b) $y - 1 = -1(x + 2)$

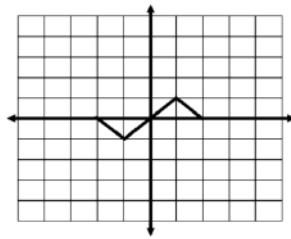
(c) $y - 1 = (x + 2)$

(d) $(2, 0)$

2. (a) neither $f(x) \neq f(-x) \neq -f(x)$

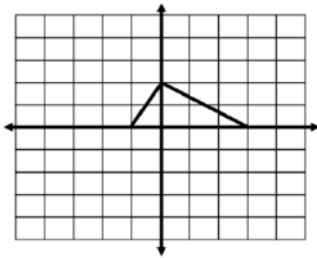
(b) odd $f(-x) = -f(x)$

3. D: $[-2, 2]$ R: $[-1, 1]$

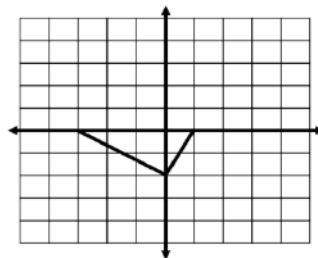


4. $f(x) = \begin{cases} \frac{5}{2}x, & 0 \leq x \leq 2 \\ \frac{-5}{2}x + 10, & 2 < x \leq 4 \end{cases}$

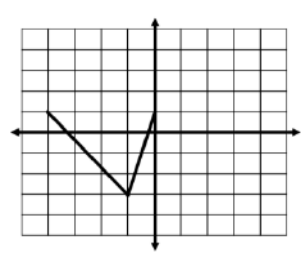
5. (a)



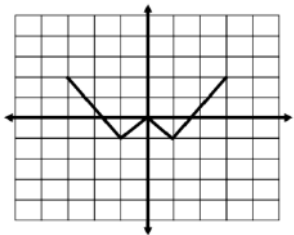
(b)



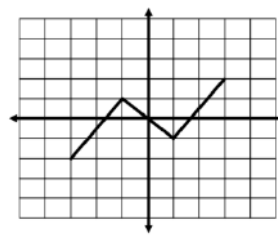
(c)



6 (a) even



(b) odd



7. $\frac{-2b^2 - 3b - 2}{6(b+1)}$

8. $a = 3$

9. (a) $t = 90 \text{ min.}$

(b) $A = 4,096,000 \text{ cells}$

10. $x \approx -6.931$

11. (a) $(2, \infty)$

(b) $(-\infty, \infty)$

(c) $x \approx 4.718$

(d) $y = 2 + e^{1-x}$

(e) show that $f(f^{-1}(x)) = f^{-1}(f(x)) = x$

12. $\sin\theta = \frac{4}{5}$ $\cos\theta = \frac{3}{5}$ $\tan\theta = \frac{4}{3}$ $\csc\theta = \frac{5}{4}$ $\sec\theta = \frac{5}{3}$ $\cot\theta = \frac{3}{4}$

13. (a) $x = 6.082$ and $x = 3.343$

(b) $x = -.201 + 2\pi k$ and $x = 3.343 + 2\pi k$

14. (a) $A = 3$ $p = \pi$ $ps = \text{none}$ $vs = 1$

(b) graph

(c) $D: (-\infty, \infty)$ $R: [-2, 4]$

(d) even $f(-x) = f(x)$

(e) $x = 2.526$

