

Precalculus

An Investigation of Functions



Edition 1.3

David Lippman
Melonie Rasmussen

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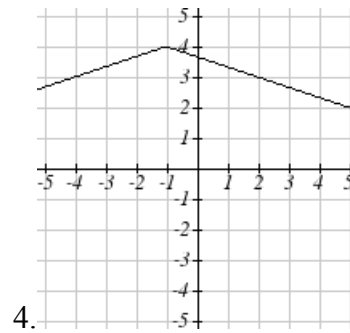
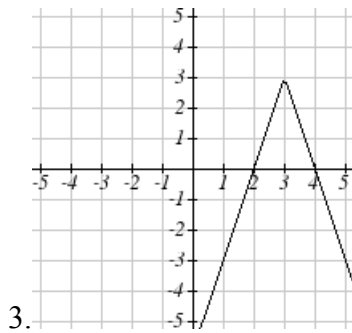
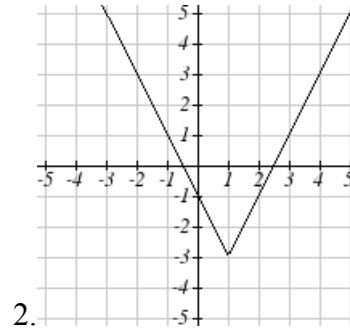
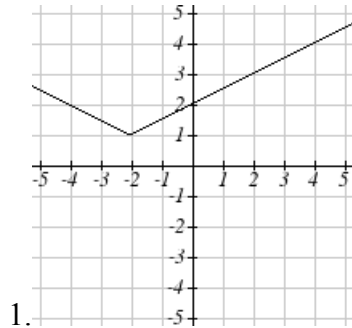
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This is the fourth official version of Edition 1. It contains typo corrections and language clarification, but is page number and problem set number equivalent to the original Edition 1.

Section 2.5 Exercises

Write an equation for each transformation of $f(x) = |x|$



Sketch a graph of each function

5. $f(x) = -|x-1| - 1$

6. $f(x) = -|x+3| + 4$

7. $f(x) = 2|x+3| + 1$

8. $f(x) = 3|x-2| - 3$

9. $f(x) = |2x-4| - 3$

10. $f(x) = |3x+9| + 2$

Solve each the equation

11. $|5x-2| = 11$

12. $|4x+2| = 15$

13. $2|4-x| = 7$

14. $3|5-x| = 5$

15. $3|x+1| - 4 = -2$

16. $5|x-4| - 7 = 2$

Find the horizontal and vertical intercepts of each function

17. $f(x) = 2|x+1| - 10$

18. $f(x) = 4|x-3| + 4$

19. $f(x) = -3|x-2| - 1$

20. $f(x) = -2|x+1| + 6$

Solve each inequality

21. $|x+5| < 6$

22. $|x-3| < 7$

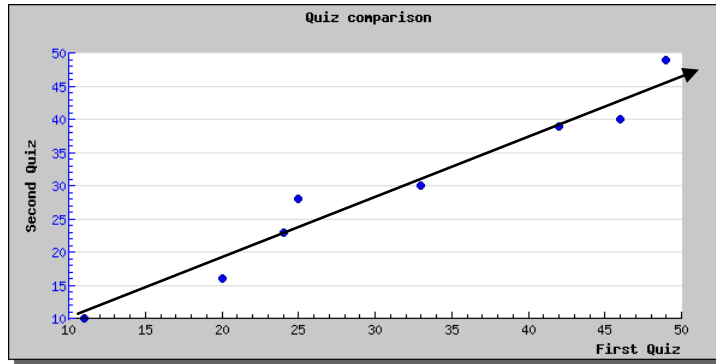
23. $|x-2| \geq 3$

24. $|x+4| \geq 2$

25. $|3x+9| < 4$

26. $|2x-9| \leq 8$

Section 2.4



1.

http://www.mathcracker.com/scatter_plot.php

3. $y = 1.971x - 3.519$, $r = 0.967$

5. $y = -0.901x + 26.04$, $r = -0.968$

7. $17.483 \approx 17$ situps

9. D

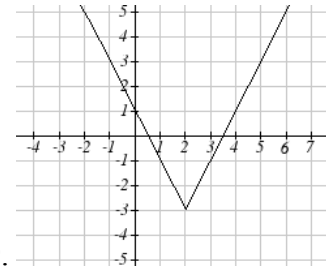
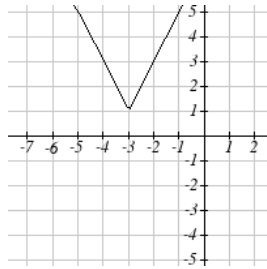
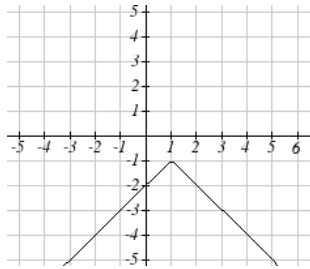
11. A

13. Yes, trend appears linear because $r = 0.994$ and will exceed 35% near the end of the year 2019.

Section 2.5

1. $y = \frac{1}{2}|x+2|+1$

3. $y = -3|x-3|+3$



5.

7.

9.

11. $x = -\frac{9}{5}$ or $x = \frac{13}{5}$

13. $x = \frac{1}{2}$ or $x = \frac{15}{2}$

15. $x = -\frac{5}{3}$ or $x = -\frac{1}{3}$

	Horizontal Intercepts	Vertical Intercept
17.	$(-6, 0)$ and $(4, 0)$	$(0, -8)$
19.	none	$(0, -7)$

21. $-11 < x < 1$ or $(-11, 1)$

23. $x \geq 5$, $x \leq -1$ or $(-\infty, -1] \cup [5, \infty)$

25. $-\frac{13}{3} < x < -\frac{5}{3}$ or $(-\frac{13}{3}, -\frac{5}{3})$