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- 5) f 6) c 7) e 8) b 9) a 10) d
- 22) reflected over the x-axis and over the y-axis, up 2
- 23) Vertical compression of $\frac{1}{4}$
- 39) reflected over the y-axis, right 1
- 40) Horizontal compression of 2, up 1
- 65) b) 63% c) 57.56 days
- 66) b) $V(1) = \$58.69$ $V(4) = \$77.29$ $V(12) = \$78.00$
 $V(2) = \$71.57$ $V(6) = \$77.92$
 c) 2.69 months

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For 1-4: Find the inverse. State the domain and range for the function and its inverse.

1. $f(x) = \frac{x+5}{3-x}$

③ $x = \frac{y+5}{3-y}$

④ $3x - xy = y + 5$
 $3x - 5 = y + xy$
 $3x - 5 = y(1+x)$
 $\frac{3x-5}{1+x} = y$

VA ① Domain $f(x)$ $x \neq 3$ $(-\infty, 3) \cup (3, \infty)$
 HA Range $f(x)$ $y \neq -1$ $(-\infty, -1) \cup (-1, \infty)$

⑥ Domain $f^{-1}(x)$ $x \neq -1$ $(-\infty, -1) \cup (-1, \infty)$
 Range $f^{-1}(x)$ $y \neq 3$ $(-\infty, 3) \cup (3, \infty)$

⑤ $f^{-1}(x) = \frac{3x-5}{1+x}$

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2. $f(x) = \frac{2x+1}{x-4}$

③ $x = \frac{2y+1}{y-4}$

④ $xy - 4x = 2y + 1$
 $xy - 2y = 4x + 1$
 $y(x-2) = 4x + 1$
 $y = \frac{4x+1}{x-2}$

⑤ $f^{-1}(x) = \frac{4x+1}{x-2}$

VA ① Domain $f(x)$ $x \neq 4$ $(-\infty, 4) \cup (4, \infty)$
 HA Range $f(x)$ $y \neq 2$ $(-\infty, 2) \cup (2, \infty)$

⑥ Domain $f^{-1}(x)$ $x \neq 2$ $(-\infty, 2) \cup (2, \infty)$
 Range $f^{-1}(x)$ $y \neq 4$ $(-\infty, 4) \cup (4, \infty)$

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3. $f(x) = \sqrt{x-4}$

③ $x = \sqrt{y-4}$

④ $x^2 = y - 4$
 $x^2 + 4 = y$

⑤ $f^{-1}(x) = x^2 + 4$

① Domain $f(x)$ $x \geq 4$ $[4, \infty)$
 Range $f(x)$ $y \geq 0$ $[0, \infty)$

⑥ Domain $f^{-1}(x)$ $x \geq 0$ $[0, \infty)$
 Range $f^{-1}(x)$ $y \geq 4$ $[4, \infty)$

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4. $f(x) = x^2 - 4x$, $x > 2$
 (Hint: Notes U4D1 #4)

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

⑤ $f^{-1}(x) = \sqrt{x+4} + 2$

① Domain $f(x)$ $x > 2$ $(2, \infty)$
 Range $f(x)$ $y > -4$ $(-4, \infty)$

② Domain $f^{-1}(x)$ $x > -4$ $(-4, \infty)$
 Range $f^{-1}(x)$ $y > 2$ $(2, \infty)$

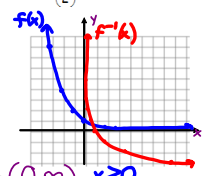
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5. Graph the function and its inverse. Make a table of values. $f(x) = \left(\frac{1}{2}\right)^x$

$f(x)$	x	-3	-2	-1	0	1	2	3
	y	8	4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$

$f^{-1}(x)$	x	8	4	2	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$
	y	-3	-2	-1	0	1	2	3

Domain $f(x)$	$(-\infty, \infty)$	$x \in \mathbb{R}$	Domain $f^{-1}(x)$	$(0, \infty)$	$x > 0$
Range $f(x)$	$(0, \infty)$	$y > 0$	Range $f^{-1}(x)$	$(-\infty, \infty)$	$y \in \mathbb{R}$



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6 - 8. Describe the transformation(s) needed to transform $f(x) = 3^x$ into the graph of the given function.

6. $g(x) = 2(3^{x+1}) - 5$

vertical stretch 2
left 1
down 5

7. $h(x) = -3^x + 4$

reflect across
x-axis
up 4

8. $j(x) = 3^{-x} + 7$

reflect across
y-axis
up 7

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9 - 11. Write in exponential form

9. $\log_2 8 = 3$

$$2^3 = 8$$

10. $\log_A B = J$

$$A^J = B$$

11. $\log_5 x = x$

$$10^x = 5$$

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12 - 13. Write in logarithmic form

12. $3^4 = 81$

$$\log_3 81 = 4$$

13. $K^A = M$

$$\log_K M = A$$

14. $2^{-4} = \frac{1}{16}$

$$\log_2 \frac{1}{16} = -4$$

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15 - 17. Evaluate.

15. $\log_4 4 = \frac{1}{3}$

$$64^x = 4$$

$$4^{3x} = 4^1$$

16. $\log_2 64 = 6$

$$2^x = 64$$

$$2^x = 2^6$$

17. $\log_3 \frac{1}{3} = -\frac{1}{2}$

$$9^x = \frac{1}{3}$$

$$3^{2x} = 3^{-1}$$

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Nov 15-7:10 AM