

Unit 2 Test Review

- 1) $\log_4 1024 = 5$
- 2) $\log_5 \frac{1}{125} = -3$
- 3) $e^{3.81} \approx 45$
- 4) $169^{1/2} = 13$
- 5) $\log_8 \frac{32x^2}{\sqrt{2}y}$
- 6) $\log(2+x) - \log 1000 - \log y$
 $\log \frac{2+x}{1000y}$
- 7) 2
- 8) $\ln 7 - \ln 8 + \ln 3$
 $\ln \frac{7 \cdot 3}{8} = \ln \frac{21}{8}$
- 9) $\log 7 - \frac{1}{3} \log w$
- 10) $\ln 2 + 2 \ln x + \ln y - \ln 3 - 3 \ln k$
- 11) $\frac{1}{2} (\log(x-1) + 2 \log(x^3-1))$
 $\frac{1}{2} \log(x-1) + \log(x^3-1)$
- 12) $\frac{1}{2} (\ln 7 + \ln z - \ln 2 - \ln g)$
- 13) -5
- 14) -3
- 15) -3
- 16) -4
- 17) 0
- 18) 2^7
- 19) $3x+1$
- 20) $x^3 - 2x$
- 21) $e^{\ln ab^2} = ab^2$

$$22) \log_5(\log_3 2x) = 0$$

$$\log_3 2x = 1$$

$$2x = 3$$

$$x = \frac{3}{2}$$

$$\star 23) 2^{3x+1} = (2^3)^{x-2}$$

$$2^{3x+1} = 2^{3x-6}$$

$$3x+1 = 3x-6$$

$$1 = -6$$

No Solution

$$24) \ln \frac{(x+2)}{x} = 0$$

$$\frac{x+2}{x} = 1$$

$$x+2 = x$$

$$0 = 2$$

No solution

$$25) -\log_{12} 12 + \log_{12}(x+2) = 0$$

$$\log_{12}(12^{-1})(x+2) = 0$$

$$\frac{1}{12}(x+2) = 1$$

$$x+2 = 12$$

$$x = 10$$

$$26) \ln \frac{2}{x+3} = \ln x+4$$

$$\frac{2}{x+3} = x+4$$

$$2 = x^2 + 7x + 12$$

$$0 = x^2 + 7x + 10$$

$$0 = (x+5)(x+2)$$

$$x = -5, -2$$

$$27) -8^{2x+6} = -100$$

$$8^{2x+6} = 100$$

$$\log_8 100 = 2x+6$$

$$2.21 \approx 2x+6$$

$$x \approx -1.89$$

$$28) \ln(5x-3) = 4$$

$$5x-3 = e^4$$

$$x \approx 11.52$$

$$29) e^{x-3} = 52$$

$$x \approx 6.95$$

$$\star 30) 5^{x+2} = 9^{3-x}$$

$$\log_5 5^{x+2} = \log_5 9^{3-x}$$

$$x+2 = (3-x) \log_5 9$$

$$x+2 = 1.37(3-x)$$

$$x+2 = 4.11 - 1.37x$$

$$2.37x = 2.11$$

$$x \approx 0.89$$

$$31) A = 30,000 (1 + 0.052)^{10}$$

$$= \$49,805.65$$

$$32) 2 = 1e^{.085t}$$

$$t = 8.15 \text{ years}$$

$$33) A = 3,800 \left(1 + \frac{.0525}{4}\right)^{4 \cdot 15}$$

$$A = \$8309.32$$

$$34) m(x) = 2\left(\frac{1}{3}\right)^{x-1}$$

a) Steep, $\rightarrow 1$

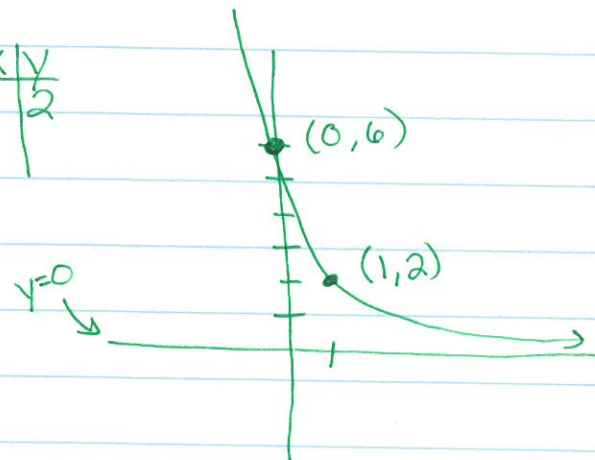
b) \mathbb{R}

c) $(0, \infty)$

d) $y = 0$

e) no x-int, y-int $(0, 6)$

x	y
1	2



$$35) t(x) = 5^x + 3$$

a) $\uparrow 3$

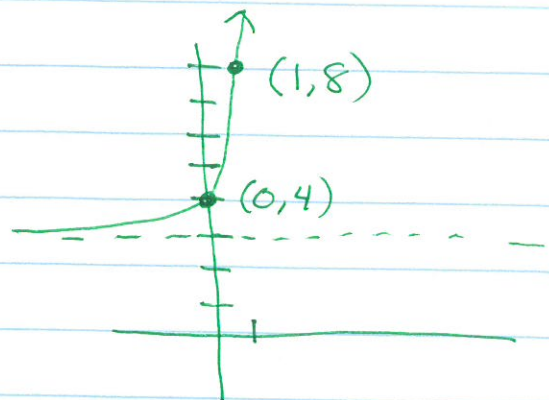
b) \mathbb{R}

c) $(3, \infty)$

d) $y = 3$

e) no x-int, y-int $(0, 4)$

x	y
1	8



$$36) m(x) = \frac{1}{2} \cdot 4^{x+2} - 1$$

a) flatter, $\leftarrow 2$, $\downarrow 1$

b) \mathbb{R}

c) $(-1, \infty)$

d) $y = -1$

$$e) 0 = \frac{1}{2} \cdot 4^{x+2} - 1$$

$$2 = 4^{x+2}$$

$$\log_4 2 = x+2$$

$$x = -1.5$$

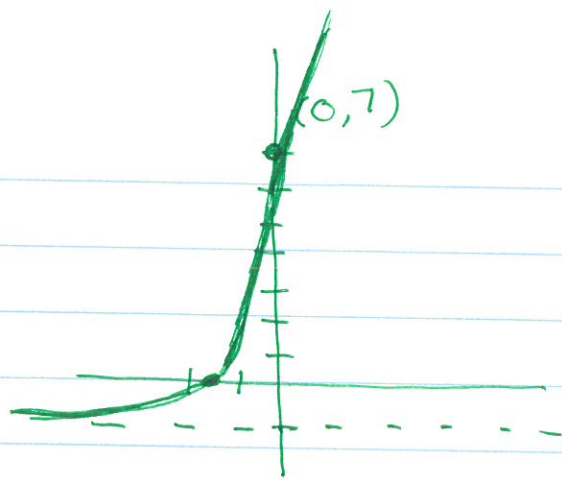
$$(-1.5, 0)$$

$$y = \frac{1}{2} \cdot 4^{0+2} - 1$$

$$y = 8 - 1$$

$$y = 7$$

$$(0, 7)$$



$$37) r(x) = \ln x$$

a) no shifts

b) $(0, \infty)$

c) \mathbb{R}

d) $x = 0$

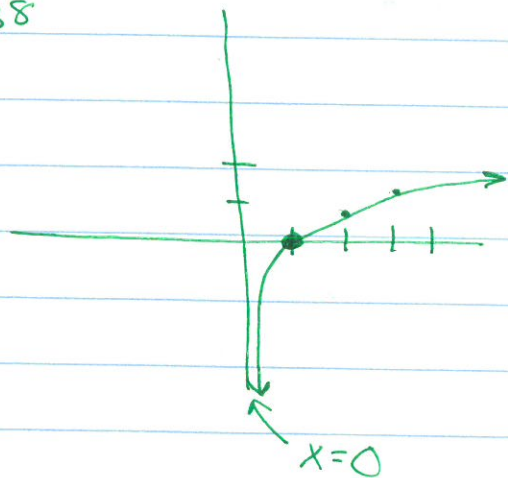
e) no y-int

$$0 = \ln x$$

$$e^0 = x$$

$$x = 1 \quad (1, 0)$$

x	y
2	0.69
4	1.38



$$38) a(x) = \log_4(x+1) - 3$$

a) $\leftarrow 1 \downarrow 3$

b) $(-1, \infty)$

c) \mathbb{R}

d) $x = -1$

e) x-int

$$3 = \log_4(x+1)$$

$$4^3 = x+1$$

$$64 = x+1$$

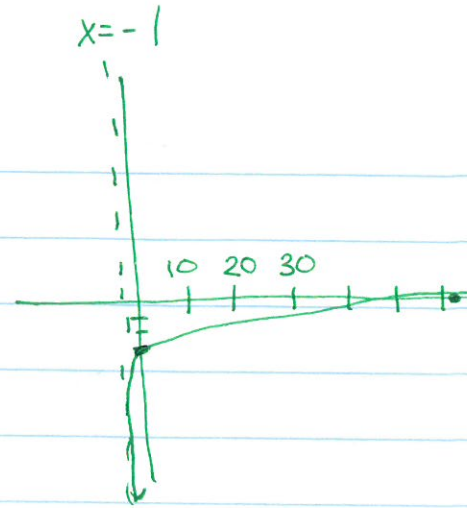
$$(63, 0)$$

y-int

$$y = \log_4 1 - 3$$

$$y = 0 - 3$$

$$(0, -3)$$



$$39) a(x) = 2 \log_2(x-4) + 3$$

a) steep, $\rightarrow 4, \uparrow 3$

b) $(4, \infty)$

c) \mathbb{R}

d) $x = 4$

e) no y-int

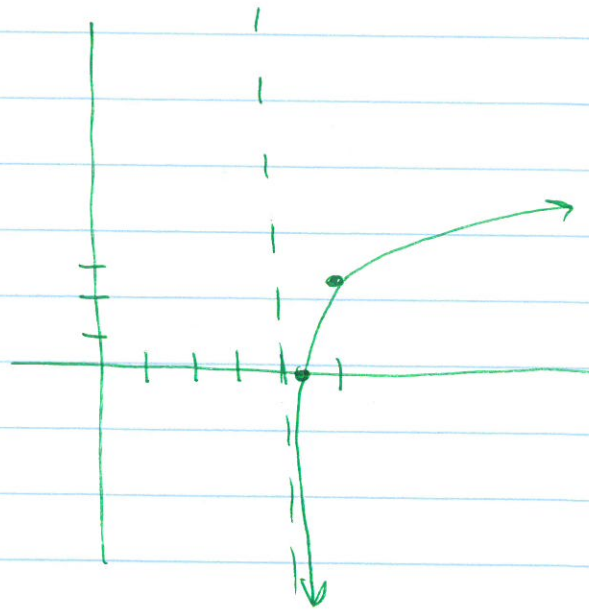
x-int

$$-3/2 = \log_2(x-4)$$

$$2^{-3/2} = x-4$$

$$x = 4.35$$

$$(4.35, 0)$$



x	y
5	3