

Quiz Review Key

1. $2^{4x-2} = 2^6$

$$4x-2=6$$

$$4x=8$$

$$x=2$$

2. $125^x = 25$

$$5^{3x} = 5^2$$

$$3x=2$$

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

3. $9^{x+2} = 27^{-x}$

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

$$2x+4 = -3x$$

$$4 = -5x$$

$$x = -\frac{4}{5}$$

4. $8^x = 12,143$

$$\log_8 12,143 = x$$

5. $\frac{9e^{5x}}{9} = \frac{1269}{9}$

$$e^{5x} = 141$$

$$\frac{\ln 141}{5} = x$$

6. $e^{12-5x} - 7 = 123$

$$e^{12-5x} = 130$$

$$\ln 130 = 12-5x$$

$$x = \frac{\ln 130 - 12}{-5}$$

7. $5^{4x+2} = 37,500$

$$\log_5 37,500 = 4x+2$$

$$x = \frac{\log_5 37,500 - 2}{4}$$

8. $3^{x+4} = 64$

$$\log_3 64 = x+4$$

$$x = \log_3 64 - 4$$

9. $2^{16x-8} = 2^{-6}$

$$16x-8 = -6$$

$$16x = 2$$

$$x = \frac{1}{8}$$

10. $\log_4 (3x-5) = 3$

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

$$64 = 3x-5$$

$$\frac{69}{3} = x$$

$$x = 23$$

11. $3 + 4 \ln(2x) = 15$

$$4 \ln(2x) = 12$$

$$\ln(2x) = 3$$

$$e^3 = 2x$$

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

12. $\log_2 (x^2-9) = 4$

$$2^4 = x^2-9$$

$$16 = x^2-9$$

$$x^2 = 25$$

$$x = \pm 5 \quad x$$

$$x = 5 \text{ only}$$

$$13. \log_3 \left(\frac{x-1}{x+2} \right) = 2$$

$$3^2 = \frac{x-1}{x+2}$$

$$9x+18 = x-1$$

$$8x = -19$$

$$x = \frac{-19}{8} \times \text{No Solution.}$$

Makes argument (-).

$$14. \ln \left(\frac{x+4}{x+1} \right) = \ln x$$

$$\frac{x+4}{x+1} = x$$

$$x^2+x = x+4$$

$$x = +/-2$$

$$x = \text{only } 2$$

$$15. \log_4 (2x+1) = \log_4 (x^2+2x-15)$$

$$2x+1 = x^2+2x-15$$

$$x^2 = 16$$

$$x = \pm 4$$

$$x = 4 \text{ only}$$

$$16. 2 \ln(3x) = 8$$

$$\ln(3x) = 4$$

$$e^4 = 3x$$

$$x = \frac{e^4}{3}$$

$$17. \log (x^2+15x) = 2$$

$$10^2 = x^2+15x$$

$$0 = x^2+15x-100$$

$$0 = (x+20)(x-5)$$

$$x = -20, 5$$

$$x = 5 \text{ only}$$

$$18. \ln \left(\frac{x-4}{x+1} \right) = \ln 6$$

$$\frac{x-4}{x+1} = 6$$

$$6x+6 = x-4$$

$$5x = -10$$

$$x = -2$$

No Solution

$$19. 3 \ln e + 5 \log 10^2$$

$$3 + 10$$

$$13$$

20. $9 - 3 \log_2 2^3$

$9 - 9 \log_2 2$

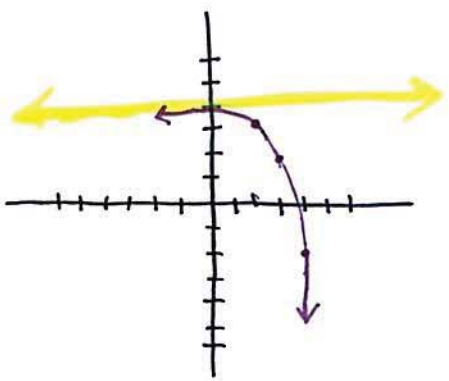
$9 - 9$

0

21. $1 + 1 + 0 + 0$

2

22.

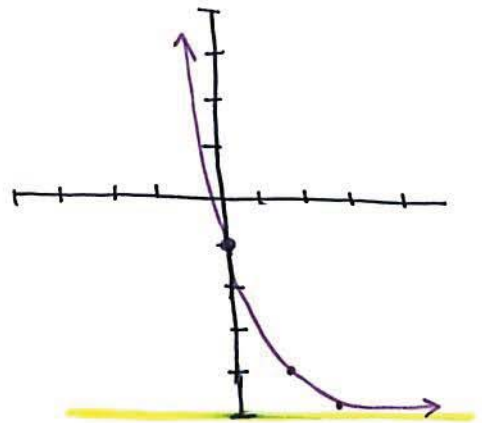


$y = -2(3)^{x-3} + 4$

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

flipped
stretched
→ 3
↑ 4

23. $y = (\frac{1}{3})^{x-1} - 4$



+1	x	y	-4
0	-1	3	-1
1	0	1	-3
2	1	$\frac{1}{3}$	$-3\frac{2}{3}$