AP Statistics Summer Assignment ID: 2

Name_____

Solve each equation.

1) $2^{-r+2} = 2^{3r}$

2) $3^{2m-1} \cdot 3^{-2m} = 3^{-3m}$

3) $3^{-2x-1} = 243$

4) $2^{-2n} = 4$

5) $\log 3x^2 - \log 9 = 3$

6) $\ln 8 + \ln (x+6) = 1$

7) $\ln 4x + \ln 2 - 4$

8) $\ln 9 + \ln 2x^2 - \ln 72$

9) $\log (x-4) + \log 2 = \log 70$

10) $\log 8 + \log 5x = \log 26$

11) $\ln (x-5) + \ln 6 = 1$

12) $\ln (x^2+7) + \ln 4 = 4$

Solve each equation by factoring.

13) $k^2 = -63 - 16k$

14) $n^2 = -48 - 15n$

15) $8x^2 = 48x$

16) $p^2 = 24 \quad 11p$

17) $n^2 + 121 = -22n$

18) $m^2 = -17m - 70$

19) $7x^2 + 56 = -57x$

20) $7r^2 - 57r = -8$

Expand each logarithm.

21) $\log_6 (x \cdot y \cdot z^2)$

22) $\log_5 (a^5 b^4)$

23) $\log (a \cdot b \cdot c^6)$

24) $\log_4 \left(\frac{12^6}{11}\right)^3$

Condense each expression to a single logarithm.

25) $20\log_2 x - 5\log_2 y$

26) $3\log_3 11 + 2\log_3 8$

Rewrite each equation in exponential form.

27) $\log_a 29 = b$

28) $\log_v 10 = u$

29) $\log_m n = -15$

30) $\log_x 87 = y$

Solve each equation. Remember to check for extraneous solutions.

31) $1 + \frac{1}{r} = \frac{4}{r}$

32) $\frac{1}{4m} + \frac{1}{4m^2} = \frac{1}{m^2}$

33) $\frac{3}{4x^2} = \frac{1}{4x} + \frac{1}{4x^2}$

34) $\frac{1}{6n^2} - \frac{1}{6n} = \frac{1}{n^2}$

35) Solve for x: $\frac{12.3 - x}{4.5} = -0.83$

36) Solve for r: $\sqrt{45 - x} = 5$

37) Solve for n: $1.96\sqrt{\frac{0.5 \cdot 0.5}{n}} < 0.03$

38) If $y = 10.2x^{0.72}$, find y when $x = 32.7$.

39) Sketch the graphs of $y = 2^x$ and $y = 3^x$ on the same set of axes. Mark and label at least three points on each of the graphs. What point(s), if any, do they have in common? Write a description comparing the two graphs.

40) Sketch the graphs of $y = \log_2 x$ and $y = \log_3 x$ on the same set of axes. Mark and label at least three points on each of the graphs. What point(s), if any, do they have in common?

41) Write a description comparing the graphs of $y = \log_2 x$ and $y = 2^x$.

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Name_____

Solve each equation.

1) $2^{-r+2} = 2^{3r}$ $\left\{\frac{1}{2}\right\}$

2) $3^{2m-1} \cdot 3^{-2m} = 3^{-3m}$ $\left\{\frac{1}{3}\right\}$

3) $3^{-2x-1} = 243$

$\{-3\}$

4) $2^{-2n} = 4$

$\{-1\}$

5) $\log 3x^2 - \log 9 = 3$

$\{10\sqrt{30}, -10\sqrt{30}\}$

6) $\ln 8 + \ln (x+6) = 1$ $\left\{\frac{e-48}{8}\right\}$

7) $\ln 4x + \ln 2 - 4$ $\left\{\frac{e^4}{8}\right\}$

8) $\ln 9 + \ln 2x^2 - \ln 72$

$\{2, -2\}$

9) $\log (x-4) + \log 2 = \log 70$

$\{39\}$

10) $\log 8 + \log 5x = \log 26$ $\left\{\frac{13}{20}\right\}$

11) $\ln (x-5) + \ln 6 = 1$ $\left\{\frac{e+30}{6}\right\}$

12) $\ln (x^2+7) + \ln 4 = 4$ $\left\{\frac{\sqrt{e^4-28}}{2}, -\frac{\sqrt{e^4-28}}{2}\right\}$

Solve each equation by factoring.

13) $k^2 = -63 - 16k$

$\{-9, -7\}$

14) $n^2 = -48 - 15n$

$\{-4, -12\}$

15) $8x^2 = 48x$

$\{-6, 0\}$

16) $p^2 = 24 \quad 11p$

$\{-8, -3\}$

17) $n^2 + 121 = -22n$

$\{-11\}$

18) $m^2 = -17m - 70$

$\{-10, -7\}$

19) $7x^2 + 56 = -57x$

$\left\{-\frac{8}{7}, -7\right\}$

20) $7r^2 - 57r = -8$

$\left\{\frac{1}{7}, 8\right\}$

Expand each logarithm.

21) $\log_6 (x \cdot y \cdot z^2)$

$\log_6 x + \log_6 y + 2\log_6 z$

22) $\log_5 (a^5 b^4)$

$5\log_5 a + 4\log_5 b$

23) $\log (a \cdot b \cdot c^6)$

$\log a + \log b + 6\log c$

24) $\log_4 \left(\frac{12^6}{11}\right)^3$

$18\log_4 12 - 3\log_4 11$

Condense each expression to a single logarithm.

25) $20\log_2 x - 5\log_2 y$

$\log_2 \frac{x^{20}}{y^5}$

26) $3\log_3 11 + 2\log_3 8$

$\log_3 (8^2 \cdot 11^3)$

Rewrite each equation in exponential form.

27) $\log_a 29 = b$

$a^b = 29$

28) $\log_v 10 = u$

$v^u = 10$

29) $\log_m n = -15$

$m^{-15} = n$

30) $\log_x 87 = y$

$x^y = 87$

Solve each equation. Remember to check for extraneous solutions.

31) $1 + \frac{1}{r} = \frac{4}{r}$

$\{3\}$

32) $\frac{1}{4m} + \frac{1}{4m^2} = \frac{1}{m^2}$

$\{3\}$

33) $\frac{3}{4x^2} = \frac{1}{4x} + \frac{1}{4x^2}$

$\{2\}$

34) $\frac{1}{6n^2} - \frac{1}{6n} = \frac{1}{n^2}$

$\{-5\}$

35) Solve for x: $\frac{12.3 - x}{4.5} = -0.83$

x=16.035

36) Solve for r: $\sqrt{45 - x} = 5$

x=20

37) Solve for n: $1.96\sqrt{\frac{0.5 \cdot 0.5}{n}} < 0.03$

$n > 1067.11$

38) If $y = 10.2x^{0.72}$, find y when $x = 32.7$.

$y = 125.62$

39) Sketch the graphs of $y = 2^x$ and $y = 3^x$ on the same set of axes. Mark and label at least three points on each of the graphs. What point(s), if any, do they have in common? Write a description comparing the two graphs.

40) Sketch the graphs of $y = \log_2 x$ and $y = \log_3 x$ on the same set of axes. Mark and label at least three points on each of the graphs. What point(s), if any, do they have in common?

41) Write a description comparing the graphs of $y = \log_2 x$ and $y = 2^x$.

Since the functions are inverses of each other, the graphs are reflections of each the line $y = x$