AP Statistics Summer Assignment

Name_____

ID: 3

Solve each equation.

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

2) $4^{-3n-2} = 4^{3}$

3) $7^{-2k} \cdot 343 = 49$

4) $4^{3p} \cdot 4^{p-3} = 4^{-2p}$

5) $\log 2x + \log 5 = 2$

6) $\ln 4x^2 - \ln 4 = 4$

7) $\log 8 + \log 5x^2 = 5$

8) $\log 5 + \log 5x^2 = 4$

9) $\ln 4x^2 - \ln 4 = 2$

10) $\log -x + \log 9 = 1$

11) $\log 4x - \log 5 = 1$

12) $\ln (x-3) - \ln 6 = 3$

Solve each equation by factoring.

13) $x^2 - 2x = 120$

14) $7a^2 = 7a + 630$

15) $p^2 - 96 = -4p$

16) $7k^2 = 308 + 49k$

17) $x^2 + 10x = 0$

18) $n^2 = 9n$

19) $10r^2 + 56r = -30$

20) $12m^2 - 32m = 0$

Expand each logarithm.

21) $\log_9 (ab^3)^5$

22) $\log (6^5 \cdot 11^5)$

23) $\log_8 \sqrt{5 \cdot 2 \cdot 11}$

24) $\log_7 \left(\frac{a^5}{b}\right)^6$

Condense each expression to a single logarithm.

25) $4\log_5 7 + 3\log_5 10$

26) $\frac{\log_6 x}{3} + \frac{\log_6 y}{3} + \frac{\log_6 z}{3}$

Rewrite each equation in exponential form.

27) $\log_x y = -9$

28) $\log_{20} v = u$

29) $\log_y x = 3$

30) $\log_v 151 = u$

Solve each equation. Remember to check for extraneous solutions.

31) $\frac{1}{5k} + \frac{k+5}{5k} = \frac{1}{k}$

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

33) $\frac{1}{p} = \frac{1}{5p} + \frac{p-4}{p}$

34) $1 - \frac{1}{x} = \frac{6x-36}{x}$

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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Solve each equation.

1) $3^{1-3x} = 3^{2x}$ $\left\{\frac{1}{5}\right\}$

2) $4^{-3x-2} = 4^{3}$ $\left\{-\frac{5}{3}\right\}$

3) $7^{-2k} \cdot 343 = 49$ $\left\{\frac{1}{2}\right\}$

4) $4^{3p} \cdot 4^{p-3} = 4^{-2p}$ $\left\{\frac{1}{2}\right\}$

5) $\log 2x + \log 5 = 2$
$\{10\}$

6) $\ln 4x^2 - \ln 4 = 4$
$\{e^2, -e^2\}$

7) $\log 8 + \log 5x^2 = 5$
$\{50, -50\}$

8) $\log 5 + \log 5x^2 = 4$
$\{20, -20\}$

9) $\ln 4x^2 - \ln 4 = 2$
$\{e, -e\}$

10) $\log -x + \log 9 = 1$ $\left\{-\frac{10}{9}\right\}$

11) $\log 4x - \log 5 = 1$ $\left\{\frac{25}{2}\right\}$

12) $\ln (x-3) - \ln 6 = 3$
$\{6e^3 + 3\}$

Solve each equation by factoring.

13) $x^2 - 2x = 120$
$\{-10, 12\}$

14) $7a^2 = 7a + 630$
$\{10, -9\}$

15) $p^2 - 96 = -4p$
$\{-12, 8\}$

16) $7k^2 = 308 + 49k$
$\{11, -4\}$

17) $x^2 + 10x = 0$
$\{-10, 0\}$

18) $n^2 = 9n$
$\{9, 0\}$

19) $10r^2 + 56r = -30$
$\left\{-\frac{3}{5}, -5\right\}$

20) $12m^2 - 32m = 0$
$\left\{\frac{8}{3}, 0\right\}$

Expand each logarithm.

21) $\log_9 (ab^3)^5$
$5\log_9 a + 15\log_9 b$

22) $\log (6^5 \cdot 11^5)$
$5\log 6 + 5\log 11$

23) $\log_8 \sqrt{5 \cdot 2 \cdot 11}$
$\frac{\log_8 5}{2} + \frac{\log_8 2}{2} + \frac{\log_8 11}{2}$

24) $\log_7 \left(\frac{a^5}{b}\right)^6$
$30\log_7 a - 6\log_7 b$

Condense each expression to a single logarithm.

25) $4\log_5 7 + 3\log_5 10$

$\log_5 (10^3 \cdot 7^4)$

26) $\frac{\log_6 x}{3} + \frac{\log_6 y}{3} + \frac{\log_6 z}{3}$

$\log_6 \sqrt[3]{zyx}$

Rewrite each equation in exponential form.

27) $\log_x y = -9$

$x^{-9} = y$

28) $\log_{20} v = u$

$20^u = v$

29) $\log_y x = 3$

$y^3 = x$

30) $\log_v 151 = u$

$v^u = 151$

Solve each equation. Remember to check for extraneous solutions.

31) $\frac{1}{5k} + \frac{k+5}{5k} = \frac{1}{k}$

$\{-1\}$

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

$\{-3\}$

33) $\frac{1}{p} = \frac{1}{5p} + \frac{p-4}{p}$ $\left\{\frac{24}{5}\right\}$

34) $1 - \frac{1}{x} = \frac{6x-36}{x}$

$\{7\}$

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 $y = x$