Algebra 2 Name_____ ID: 3

# Cumulative Test Spring Practice Test

Date_____ Period____

**Solve each equation. Remember to check for extraneous solutions.**

1) $5 = \sqrt{n-7} - 2$

A) {8} B) {2}
C) {−5, −9} D) {56}

2) $\sqrt{-54 + 15k} = k$

A) {6, 9} B) {9, −9}
C) No solution. D) {9}

**Write each expression in radical form.**

3) $10^{\frac{1}{2}}$

A) $\sqrt{7}$ B) $(\sqrt[3]{4})^5$
C) $(\sqrt[3]{5})^5$ D) $\sqrt{10}$

4) $3^{\frac{7}{4}}$

A) $\sqrt[4]{2}$ B) $(\sqrt[4]{3})^7$
C) $\sqrt[4]{5}$ D) $(\sqrt[3]{6})^5$

**Write each expression in exponential form.**

5) $(\sqrt[5]{10})^2$

A) $10^{\frac{2}{5}}$ B) $10^{\frac{5}{2}}$
C) $10^{\frac{1}{5}}$ D) $10^{2.5}$

6) $(\sqrt[5]{10})^8$

A) $10^{\frac{1}{5}}$ B) $10^8$
C) $10^{\frac{8}{5}}$ D) $10^{\frac{5}{8}}$

**Simplify.**

7) $64^{\frac{3}{2}}$

A) 16 B) 24
C) 343 D) 512

8) $4^{\frac{3}{2}}$

A) 3 B) 8
C) 16 D) 64

**Solve each equation.**

9) $16 = n^{\frac{4}{3}}$

A) {−8} B) {−8, −4}
C) {8, −8} D) {−8, −7}

10) $-2 + 5x^{\frac{5}{3}} = 158$

A) {−4} B) {8}
C) {−2, 4} D) {−2, −4}

11) $\log_{13}(4x + 9) = \log_{13} -5x$

A) {14} B) $\left\{-\frac{7}{6}\right\}$
C) {−1} D) {−4}

12) $\log_{18}(4n - 1) = \log_{18}(n^2 - 1)$

A) {0} B) {4}
C) {2} D) {4, 2}

13) $\log_5(x^2-10)-\log_5 3=\log_5 13$

A) $\{7,-7\}$ B) $\{1,-1\}$
C) $\{3,-3\}$ D) $\{2,-2\}$

14) $27^x=81^{3x}$

A) $\{1\}$ B) $\{0\}$
C) $\{-3\}$ D) $\{7\}$

15) $216^{2n}=6^2$

A) $\{-2\}$ B) No solution.
C) $\left\{\frac{1}{3}\right\}$ D) $\left\{\frac{1}{2}\right\}$

**Rewrite each equation in exponential form.**

16) $\log_{11} y=x$

A) $11^x=y$ B) $11^y=x$
C) $x^y=11$ D) $y^x=11$

17) $\log_{13} y=x$

A) $y^{13}=x$ B) $x^{13}=y$
C) $13^x=y$ D) $13^y=x$

**Rewrite each equation in logarithmic form.**

18) $x^{17}=y$

A) $\log_x y=17$ B) $\log_{17} y=x$
C) $\log_x 17=y$ D) $\log_y 17=x$

19) $p^3=95$

A) $\log_p 95=3$ B) $\log_{95} 3=p$
C) $\log_p 3=95$ D) $\log_{95} p=3$

**Expand each logarithm.**

20) $\log_6\left(\frac{x}{y^3}\right)^4$

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

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

C) $4\log_6 x-12\log_6 y$

D) $12\log_6 x-4\log_6 y$

21) $\log\left(\frac{u^3}{v}\right)^5$

A) $5\log u+15\log v$
B) $15\log u+5\log v$
C) $3\log u+5\log v$
D) $15\log u-5\log v$

**Condense each expression to a single logarithm.**

22) $4\log x-24\log y$

A) $\log\frac{x^{24}}{y^4}$ B) $\log\frac{x^4}{y^{24}}$
C) $\log\left(z\sqrt{yx}\right)$ D) $\log\left(z^6\sqrt{x}\right)$

23) $4\log_5 7+8\log_5 6$

A) $\log_5\sqrt[3]{462}$
B) $\log_5\left(42\cdot 11^2\right)$
C) $\log_5\left(6^4\cdot 7^2\right)$
D) $\log_5\left(6^8\cdot 7^4\right)$

**Solve each equation. Round your answers to the nearest ten-thousandth.**

24) $3 \cdot 20^{-5k} = 72$

A) −0.6035 B) −0.6356
C) −0.276 D) −0.2122

25) $14^{6-5m} + 9 = 77$

A) 0.3441 B) 0.8802
C) 0.3561 D) 0.8335

26) $e^{n-4} + 1 = 5$

A) 4.6737 B) 4.877
C) 4.6021 D) 5.3863

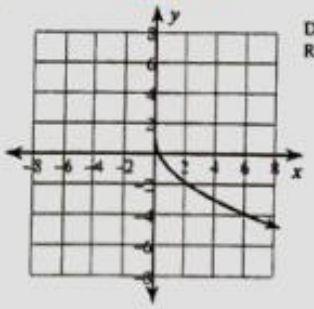
27) $-5e^{-7a-10} = -70$

A) −1.5609 B) −1.5923
C) −1.6306 D) −1.8056

**Identify the domain and range of each. Then sketch the graph.**

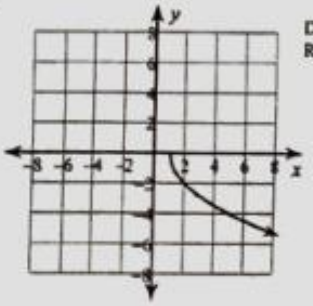
28) $y = -2\sqrt{x+1}$

A)



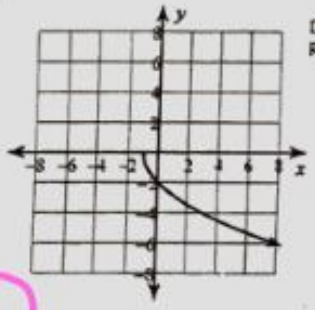
Domain: $x \geq 0$
Range: $y \leq 1$

B)



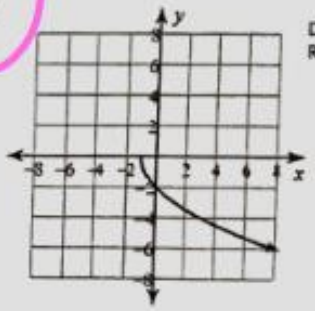
Domain: $x \geq 1$
Range: $y \leq 0$

C)



Domain: $x \geq -1$
Range: $y \geq 0$

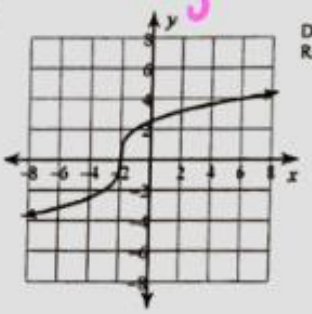
D)



Domain: $x \geq -1$
Range: $y \leq 0$

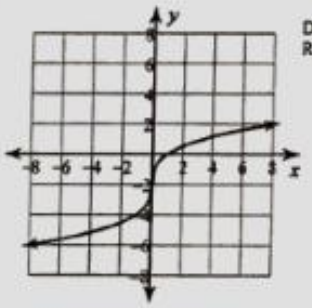
29) $y = 2\sqrt[3]{x-2}$

A)



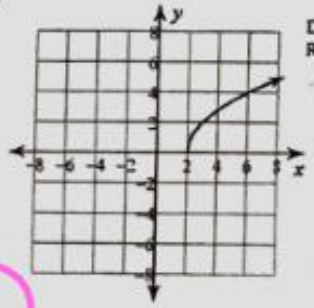
Domain: { All real numbers. }
Range: { All real numbers. }

B)



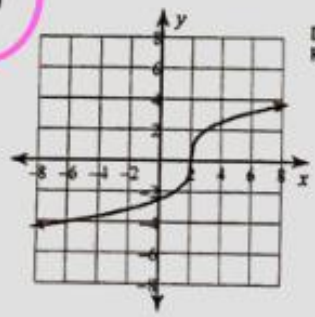
Domain: { All real numbers. }
Range: { All real numbers. }

C)



Domain: $x \geq 2$
Range: $y \geq 0$

D)

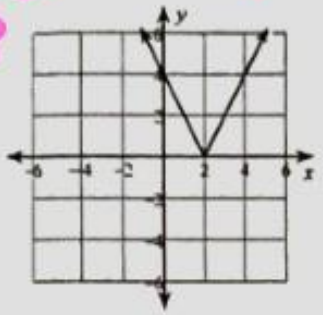


Domain: { All real numbers. }
Range: { All real numbers. }

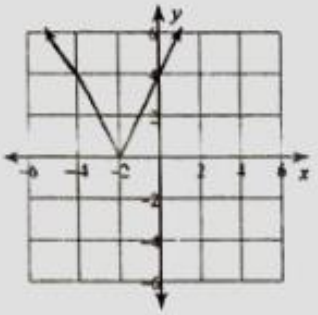
**Graph each equation.**

30) $y = -2|x-2|$ right 2, Flip

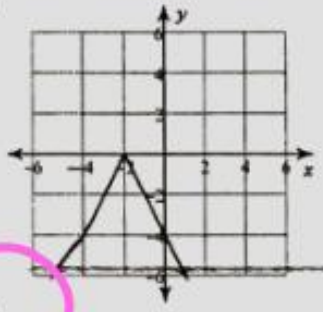
A)



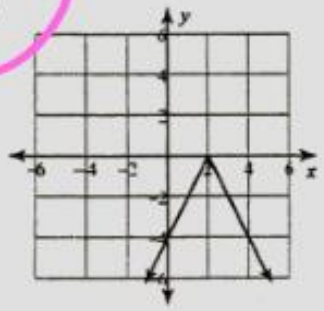
B)



C)

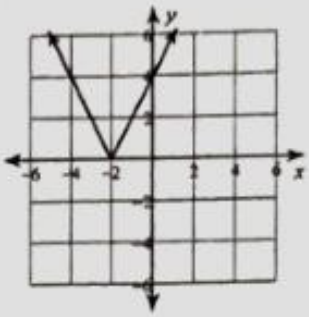


D)

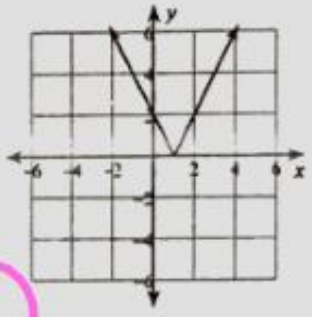


31) $y = 2|x-2|$ right 2

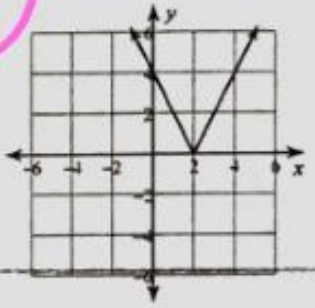
A)



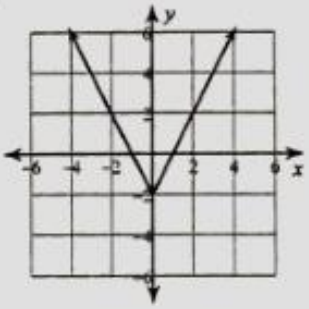
B)



C)



D)



32) Beth invests $1,415 in a savings account with a fixed annual interest rate of 4% compounded continuously. How long will it take for the account balance to reach $2,110.93?

A) 9 years B) 11 years
C) 8 years D) 10 years

33) Wilbur invests a sum of money in a savings account with a fixed annual interest rate of 7.37% compounded continuously. After 10 years, the balance reaches $2,917.16. What was the amount of the initial investment?

A) $,882 B) $1,653
C) $1,139 D) $1,396