

FINAL EXAM Good Luck!

Date _____ Period _____

Do this exam, documenting your answer choices carefully. Enter your answer choices into the Microsoft Word document that is called "Final Exam Answer Sheet - Spring 2020" and is a separate attachment to the same message that brought this exam to you. Turn in the answer sheet via livegrades message attachment or email attachment. Email it to mbledsoe@k12.wv.us and enter "MTH 132 FINAL EXAM - Sp2020: (enter your name here)" as the subject of the message. You may use your notes and book but no other living, breathing entity - and not the internet or apps on your devices other than the one used to open the test, the answer sheet, and possibly your calculator ap. Remember everything is due by (before) midnight on Thursday, April 30, 2020. ANY ITEMS TURNED IN VIA HIGH SCHOOL DROP OFF MUST BE TURNED IN BY 11 AM THURSDAY, APRIL 30, 2020. I wish each of your the best luck - happiness and fortune. - Now get started and good luck!

Simplify each expression.

1) $\frac{7n^2 - 2n - 9}{3n^3 + 3n^2}$

A) $\frac{3n + 5}{3(n + 3)}$

B) $\frac{3(n + 3)}{3n + 5}$

C) $\frac{7n - 10}{3n + 8}$

D) $\frac{3(n - 3)}{2n + 9}$

E) $\frac{7n - 9}{3n^2}$

2) $\frac{-10 - 5i}{7 + 5i}$

A) $\frac{-119 + 85i}{74}$

B) $\frac{-42 + 30i}{37}$

C) $\frac{-10 - 5i}{13}$

D) $\frac{-95 + 15i}{74}$

E) $\frac{-10 - 5i}{12}$

Solve each equation. Make sure to check for extraneous solutions.

3) $\frac{x + 1}{x^2 - x - 12} = \frac{x + 5}{x^2 - x - 12} - \frac{1}{x - 4}$

A) $\{-3\}$

B) $\{3\}$

C) $\{-4\}$

D) $\{4\}$

E) $\{1\}$

4) $4n^2 + 5 = 54$

A) $\{1, -1\}$

B) $\left\{-\frac{27}{5}, \frac{27}{5}\right\}$

C) $\{i\sqrt{3}, -i\sqrt{3}\}$

D) $\left\{\frac{7}{2}, -\frac{7}{2}\right\}$

E) $\left\{\frac{3i\sqrt{15}}{5}, -\frac{3i\sqrt{15}}{5}\right\}$

Use the information provided to write the standard form equation of the circle.

5) $x^2 - 26x + 421 = -32y - y^2$

A) $(x + 12)^2 + (y - 17)^2 = 4$

B) $(x - 17)^2 + (y + 14)^2 = 4$

C) $(x - 17)^2 + (y - 15)^2 = 4$

D) $(x - 13)^2 + (y + 16)^2 = 4$

E) $(x + 17)^2 + (y + 14)^2 = 16$

Write the slope-intercept form of the equation of the line.

6) $y + 5 = \frac{6}{5}(x + 5)$

A) $y = -\frac{6}{5}x + 1$

B) $y = x + \frac{6}{5}$

C) $y = \frac{6}{5}x + 1$

D) $y = \frac{3}{5}x + \frac{6}{5}$

E) $y = -\frac{3}{5}x + \frac{6}{5}$

7) through: $(-5, 3)$ and $(0, -2)$

A) $y = -4x - 2$

B) $y = -x - 2$

C) $y = -3x + 4$

D) $y = 4x - 2$

E) $y = -2x + 4$

Write the standard form of the equation of the line.

8) through: $(-2, 4)$, slope = -3

A) $x + 2y = -3$

B) $3x + y = -2$

C) $x + 2y = 3$

D) $x - 2y = 3$

E) $3x - y = -2$

Find the discriminant of each quadratic equation then state the number and type of solutions.

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

A) -156 ; two imaginary solutions

B) -36 ; one real solution

C) -36 ; two imaginary solutions

D) 44 ; two real solutions

E) 24 ; two real solutions

Find all possible rational zeros of each equation.

10) $y = 3x^5 + 6x^4 + 5x^3 + 10x^2 + 2x + 4$

A) $0, \pm 1, \pm 3, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{1}{4}, \pm \frac{3}{4}$

B) $\pm 1, \pm 3, \pm 9, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}$

C) $\pm 1, \pm 2, \pm 4, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{4}{3}$

D) $\pm 1, \pm 3, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{1}{4}, \pm \frac{3}{4}$

E) $\pm 1, \pm 3$

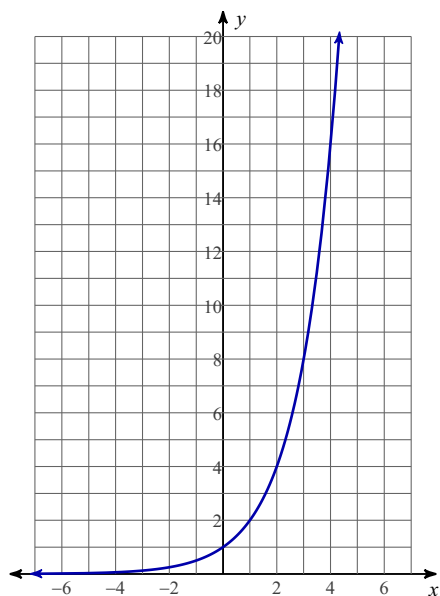
Find all roots (zeros) of the equation.

11) $x^4 - 5x^2 - 24 = 0$

- A) $\left\{ \frac{i\sqrt{14}}{2}, -\frac{i\sqrt{14}}{2}, i\sqrt{3}, -i\sqrt{3} \right\}$
B) $\{2i\sqrt{2}, -2i\sqrt{2}, i\sqrt{3}, -i\sqrt{3}\}$
C) $\left\{ 2\sqrt{2}, -2\sqrt{2}, \frac{i\sqrt{6}}{2}, -\frac{i\sqrt{6}}{2} \right\}$
D) $\left\{ i\sqrt{6}, -i\sqrt{6}, \frac{i\sqrt{6}}{2}, -\frac{i\sqrt{6}}{2} \right\}$
E) $\{2\sqrt{2}, -2\sqrt{2}, i\sqrt{3}, -i\sqrt{3}\}$

Write an equation for each graph.

12)

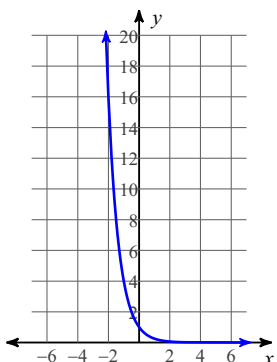


- A) $y = 3^x$ B) $y = \frac{1}{4} \cdot 3^x$
C) $y = 2^x$ D) $y = 4^x$
E) $y = 4 \cdot 2^x$

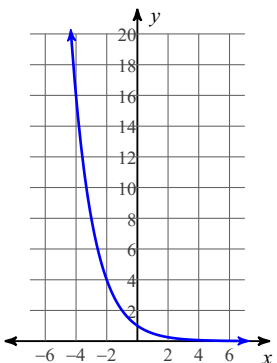
Sketch the graph of each function.

13) $y = \left(\frac{1}{4}\right)^x$

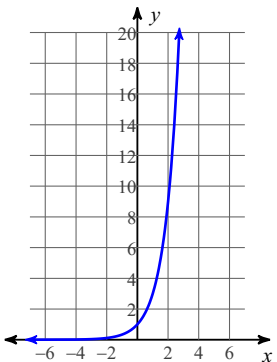
A)



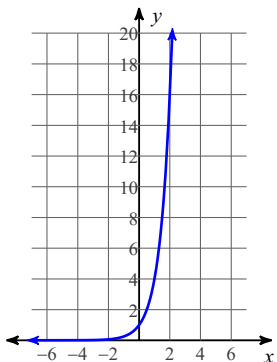
B)



C)



D)



Rewrite each equation in exponential form.

14) $\log_3 9 = 2$

- A) $3^9 = 2$ B) $3^2 = 9$
C) $9^2 = 3$ D) $2^9 = 3$
E) $2^3 = 9$

Rewrite each equation in logarithmic form.

15) $b^{-17} = a$

- A) $\log_{-17} a = b$
B) $\log_a b = -17$
C) $\log_{-17} b = a$
D) $\log_b a = -17$
E) $\log_b -17 = a$

Solve each equation.

16) $\log_3 n = 4$

- A) 0 B) {81}
C) $\{\frac{1}{81}\}$ D) {12}
E) $\{\frac{1}{12}\}$

17) $\log_8 4 + \log_8 (x^2 + 7) = 3$

- A) $\{4, -4\}$ B) $\{3, -3\}$
C) $\{2, -2\}$ D) $\{1, -1\}$
E) $\{11, -11\}$

18) $\log_8 4x^2 - \log_8 5 = 2$

- A) {2}
B) $\{2\sqrt{2}, -2\sqrt{2}\}$
C) $\{4\sqrt{2}, -4\sqrt{2}\}$
D) No solution.
E) $\{4\sqrt{5}, -4\sqrt{5}\}$

Condense each expression to a single logarithm.

19) $2 \log x + \log y - 6 \log z$

- A) $\log (x^2 \cdot (y - z)^6)$
B) $\log \left(y^2 \cdot \frac{x^{12}}{z} \right)$
C) $\log \frac{x^2 \cdot y}{z^6}$
D) $\log \frac{x^2}{yz^6}$
E) $\log (x^2 \cdot (yz)^6)$

20) $\frac{\log x}{3} + \frac{\log y}{3} + \frac{\log z}{3}$

- A) $\log \sqrt[3]{zyx}$ B) $\log (yxz^3)$
C) $\log \frac{x^6}{y^{18}}$ D) $\log (y^6 x^3)$
E) $\log (y^{18} x^6)$