

Print Name _____

SHORT ANSWER. Solve. Show your work and use algebraic methods. Circle your final answer and include units if applicable.

Express the number in terms of i.

1) $\sqrt{-20}$

1) _____

Simplify. Write your answers in the form of a+bi, where a and b are real numbers.

2) $(6 + \sqrt{-9})(2 + \sqrt{-64})$

2) _____

Simplify.

3) i^{17}

3) _____

Simplify. Write your answers in the form of a+bi, where a and b are real numbers.

4) $(6 - \sqrt{-36})(2 + \sqrt{-100})$

4) _____

5) $\frac{1 - 5i}{(1 + 5i)^2}$

5) _____

Use the quadratic formula to find the exact solutions.

6) $x^2 + 35 = 5x$

6) _____

Solve.

7) $49t^3 + 16t = -70t^2$

7) _____

8) $(4x - 7)(4x - 3) = 0$

8) _____

Use the quadratic formula to find the exact solutions.

9) $x^2 + 2x = 8$

9) _____

Solve.

10) $9x^3 + x^2 - 225x - 25 = 0$

10) _____

11) $\frac{4}{m+3} + \frac{5}{m} = \frac{3m+3}{m^2+3m}$

11) _____

12) $\sqrt[6]{x^2 - 14} = 1$

12) _____

13) $\frac{1}{A} = \frac{1}{B} + \frac{1}{C}$, for A

13) _____

14) $x = \sqrt{x+13} + 7$

14) _____

15) $\sqrt[3]{4x+7} = -3$

15) _____

Use substitution to determine whether the given number is a zero of the given polynomial.

16) $x = 3$;

$f(x) = -x^4 - 8x^2 - 5x + 168$

16) _____

Find the correct end behavior diagram for the given polynomial function.

17) $f(x) = -x^6 + 3x^5 - x^2 - 4x + 3$

17) _____

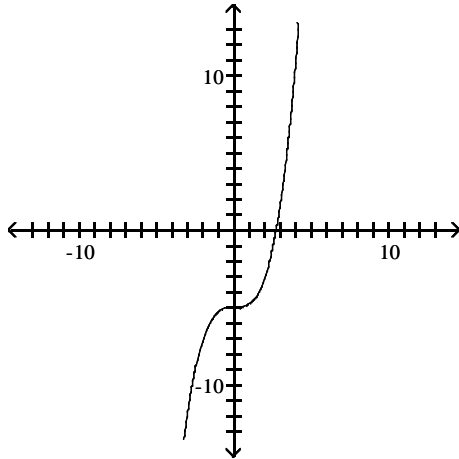
MULTIPLE CHOICE. Choose the answer that best completes the statement or answers the question. Clearly write your choice in the blank provided. Also fill in the scantron answer sheet. There is only one answer per question. If a question appears to have no instructions, use the instructions for the previous question. Good luck and have fun!

Use the leading-term test to match the function with the correct graph.

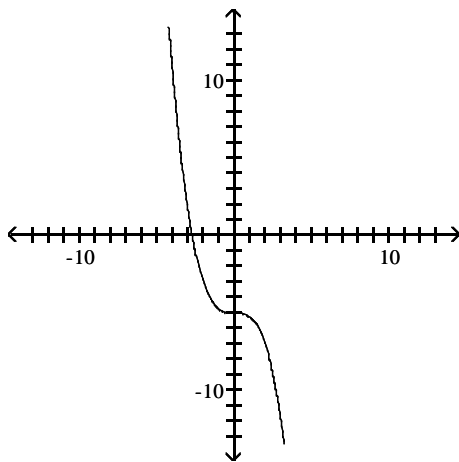
18) $f(x) = \frac{1}{4}x^2 - 5$

18) _____

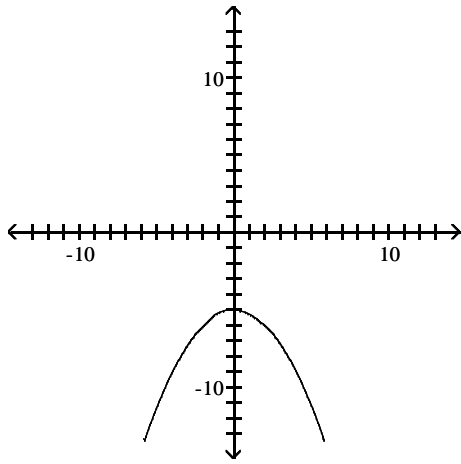
A)



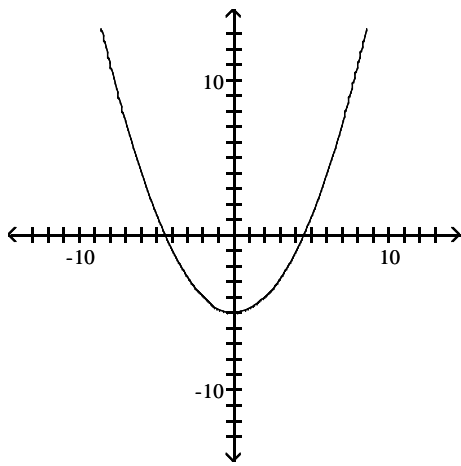
B)



C)



D)



SHORT ANSWER. Solve. Show your work and use algebraic methods. Circle your final answer and include units if applicable.

Solve the problem.

- 19) Assume that a person's threshold weight W , defined as the weight above which the risk of death rises dramatically, is given by $W(h) = \left(\frac{h}{12.3}\right)^3$, where W is in pounds and h is the person's height in inches. Find the threshold weight for a person who is 6 ft 1 in. tall. Round your answer to the nearest pound. 19) _____

Find the zeros of the polynomial function and state the multiplicity of each.

- 20) $f(x) = 3x^3 + x^2 - 27x - 9$ 20) _____

Answer Key

Testname: 131_GRPREV_31_32_34_41

1) $2\sqrt{5}i$

Objective: (3.1) Express Number in Terms of i

2) $-12 + 54i$

Objective: (3.1) Multiply Complex Numbers

3) i

Objective: (3.1) Simplify Powers of i

4) $72 + 48i$

Objective: (3.1) Multiply Complex Numbers

5) $-\frac{37}{338} + \frac{55}{338}i$

Objective: (3.1) Divide Complex Numbers

6) $\frac{5}{2} \pm \frac{\sqrt{115}}{2}i$

Objective: (3.2) Use Quadratic Formula to Solve Equation

7) $0, -\frac{2}{7}, -\frac{8}{7}$

Objective: (3.2) Solve Cubic Equation by Factoring

8) $\frac{7}{4}, \frac{3}{4}$

Objective: (3.2) Solve Quadratic Equation by Factoring or Square Root Principle

9) $-4, 2$

Objective: (3.2) Use Quadratic Formula to Solve Equation

10) $-5, 5, -\frac{1}{9}$

Objective: (3.2) Solve Cubic Equation by Factoring

11) -2

Objective: (3.4) Solve Rational Equation

12) $-\sqrt{15}, \sqrt{15}$

Objective: (3.4) Solve Radical Equation (One Radical)

13) $A = \frac{BC}{B+C}$

Objective: (3.4) Solve Formula for Indicated Variable

14) 12

Objective: (3.4) Solve Radical Equation (One Radical)

15) $-\frac{17}{2}$

Objective: (3.4) Solve Radical Equation (One Radical)

16) Yes

Objective: (4.1) Determine if Number Is Zero of Polynomial (Y/N)

17) $\swarrow \searrow$

Objective: (4.1) Determine End Behavior of Polynomial Function

18) D

Objective: (4.1) Match Function to Graph

19) 209.1 lb

Objective: (4.1) Solve Apps: Evaluate Polynomial Function

Answer Key

Testname: 131_GRPREV_31_32_34_41

20) -3, multiplicity 1; 3, multiplicity 1; $-\frac{1}{3}$, multiplicity 1

Objective: (4.1) Find Zeros of Polynomial Function; State Multiplicities