MTH111 College Algebra Unit 3 Assessment Test Bank

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | Could be turned into an online short answer problem | 2 | Could be turned into an online short answer problem | 3 | Would need to see the students work |
| 4 | Would need to see the students work | 5 | Would need to see the students work | 6 | Would need to see the students work |
| 7 | Would need to see the students work | 8 | Could be turned into an online matching problem | 9 | Would need to see the students work |

1. A polynomial function is partially given:

a) What is the degree of the polynomial? b) What is the leading coefficient of the polynomial?

4 -8

c) Describe the long term behavior of the graph of the function:

as and as

d) The graph of this polynomial will have at most \_\_\_\_\_\_ turning points (bumps).

3

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a) What is the degree of the polynomial? b) What is the leading coefficient of the polynomial?

3 6

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2

1. A polynomial function is partially given:

a) What is the degree of the polynomial? b) What is the leading coefficient of the polynomial?

4 -5

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a) What is the degree of the polynomial? b) What is the leading coefficient of the polynomial?

4 7

c) Describe the long term behavior of the graph of the function:

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3

2. A polynomial function is given as . Find its vertical and horizontal intercepts.

(0,36), (2, 0), (-3, 0)

2. A polynomial function is given as. Find its vertical and horizontal intercepts.

(0, 32). (-2, 0), (1, 0)

2. A polynomial function is given as . Algebraically find its vertical and horizontal intercepts.

(0, -120), (-2, 0), (3, 0)

2. A polynomial function is given as . Algebraically find its vertical and horizontal intercepts.

(0, -60), (2, 0), (-5, 0)

3. Write an equation for the quadratic function shown in the graph.

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4. a) Use the vertex formula to find the vertex of .

b) Write the quadratic function in vertex form

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5. A person standing on top of a building throws a ball vertically up. The height (in feet) of the ball above the ground t seconds after it is thrown is given by:

**Use algebra** to answer the following questions:

a) After how many seconds does the ball reach its maximum height?

b) What is the maximum height?

c) How many seconds does it take for the ball to hit the ground?

5. The cost of manufacturing bicycles is given by the function

**Use algebra** to answer the following questions:

a) How many bicycles must be manufactured to minimize the cost?

b) What is the minimum cost?

c) If the current costs are $42,000, how many bicycles are being manufactured?

5. A person standing on top of a 680 foot cliff throws a ball vertically up. The height (in feet) of the ball above the ground t seconds after it is thrown is given by:

**Use algebra** to answer the following questions:

a) Find the vertex of the function and interpret what it means in the context of the problem. Use sentences and appropriate units

b) Find the vertical intercept(s) and interpret what it means in the context of the problem. Use a sentence and any appropriate units

c) Find the horizontal intercept(s) and interpret what it means in the context of the problem. Use a sentence and any appropriate units

6. Write an equation for the polynomial function shown in the graph.

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7. a) Sketch a detailed graph (locate all intercepts and label the scale of the -axis) for:

.

b) Solve , you may use your graph.

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b) Solve , you may use your graph.

8. Match each function with its asymptote(s)

|  |  |
| --- | --- |
| a.  b.  c. | I. b  II. c  III. a  IV. a |

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|  |  |
| --- | --- |
| a.  b.  c. | I. b  II. a  III. a  IV. c |

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| --- | --- |
| a.  b.  c. | I. a  II. c  III. c  IV. b |

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|  |  |
| --- | --- |
| a.  b.  c. | I. c  II. a  III. b  IV. b |

9. For the function find (if they exist) the horizontal intercept(s), the vertical intercept, the vertical asymptote(s) and the horizontal asymptote. Use that information to sketch the graph of the function. Indicate the asymptotes as dotted lines and label the scale on each axis.

|  |  |
| --- | --- |
| Horizontal  Intercept(s) |  |
| Vertical  Intercept |  |
| Vertical  Asymptote(s) |  |
| Horizontal  Asymptote |  |

9. For the function find (if they exist) the horizontal intercept(s), the vertical intercept, the vertical asymptote(s) and the horizontal asymptote. Use that information to sketch the graph of the function. Indicate the asymptotes as dotted lines and label the scale on each axis.

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| Horizontal  Intercept(s) |  |
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|  |  |
| --- | --- |
| Horizontal  Intercept(s) |  |
| Vertical  Intercept |  |
| Vertical  Asymptote(s) |  |
| Horizontal  Asymptote |  |

10. Write an equation for a rational function with the given characteristics:

Vertical asymptotes at , and

x-intercept at and y-intercept at

10. Write an equation for a **rational** function with the given characteristics:

Vertical asymptotes at , and Horizontal intercept at and vertical intercept at

10. Write an equation for a **rational** function with the given graph:

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10. For the function , find a domain on which the function is one-to-one and non-decreasing. Then find an inverse of the function on this domain.

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10. For the , find an inverse function. Determine the domain on which this inverse function will be one-to-one and non-decreasing.

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11. Find the inverse of the function

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