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| 1. Find parametric equations to represent the line segment from .​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

|  |  |
| --- | --- |
| *ANSWER:* | d |

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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 2. If a projectile is fired with an initial velocity of *v*0 meters per second at an angle α above the horizontal and air resistance is assumed to be negligible, then its position after *t* seconds is given by the parametric equations​​where *g* is the acceleration of gravity . If a gun is fired with α = 55° and *v*0 = 440 m/s when will the bullet hit the ground?​

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| --- | --- | --- |
|   | a.  | *t* = 244 s |
|   | b.  | *t* = 74 s |
|   | c.  | *t* = 344 s |
|   | d.  | *t* = 124 s |
|   | e.  | *t* = 224 s |

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| --- | --- |
| *ANSWER:* | b |

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| 3. Describe the motion of a particle with position (*x*, *y*) as *t*varies in the given interval 0 ≤ *t ≤* 2π.​​

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|   | a.  | Moves once counterclockwise along the circle *x*2+ *y*2= 1 starting and ending at (0, –6).​ |
|   | b.  | Moves once counterclockwise along the ellipse  starting and ending at  (0, 6).​ |
|   | c.  | Moves once counterclockwise along the ellipse  starting and ending at (–6, 0).​ |
|   | d.  | Moves once clockwise along the ellipse  starting and ending at (0, 6).​ |
|   | e.  | Moves once clockwise along the circle  starting and ending at (0, 6).​ |

|  |  |
| --- | --- |
| *ANSWER:* | d |

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| 4. If  *a* and  *b* are fixed numbers, find parametric equations for the set of all points *P* determined as shown in the figure, using the angle *ang* as the parameter. Write the equations for *a* = 15 and *b =*6.​​​​​​​

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| *ANSWER:* | ​​​​ |

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| 5. Find parametric equations for the path of a particle that moves once clockwise along the circle  , starting at (4, 9).

|  |  |
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| *ANSWER:* |  |

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| 6. Eliminate the parameter to find a Cartesian equation of the curve.

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| *ANSWER:* |  |

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| 7. Sketch the parametric curve and eliminate the parameter to find the Cartesian equation of the curve.​​​

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| *ANSWER:* | ​​​​​​​​ |

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| 8. Eliminate the parameter to find a Cartesian equation of the curve.​

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| *ANSWER:* | *x*= 6 – *y* |

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| 9. Find the point(s) of intersection of the following two parametric curves, by first eliminating the parameter, then solving the system of equations.​ and ​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  | (0, 0) and (1, 1) |
|   | e.  | (0, 0), (1, -1), and (1, 1) |

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| *ANSWER:* | d |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. Find the point(s) of intersection of the following two parametric curves, by first eliminating the parameter, then solving the system of equations.​ and ​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  | (45, 900) and (5, 100) |
|   | e.  | (45, 900) and (900, 100) |

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| --- | --- |
| *ANSWER:* | d |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. Eliminate the parameter to find a Cartesian equation of the curve.​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

|  |  |
| --- | --- |
| *ANSWER:* | a |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. Find the parametric equations for the path of a particle that moves two and a half times clockwise around the circle , starting at .​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

|  |  |
| --- | --- |
| *ANSWER:* | a |

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| 13. Find parametric equations for the ellipse .​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

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| --- | --- |
| *ANSWER:* | a |

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| 14. Let *P* be a point at a distance 6 units from the center of a circle of radius 2. The curve traced out by *P* as the circle rolls along a straight line is called a trochoid. (Think of the motion of a point on a spoke of a bicycle wheel.) Assuming the line is the *x*-axis and  when *P* is at one of its lowest points, find the parametric equations of the trochoid. (Hint: use the same parameter  as for the cycloid.)​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

|  |  |
| --- | --- |
| *ANSWER:* | a |

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| 15. Determine which of the following parametric equations matches the graph.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

|  |  |
| --- | --- |
| *ANSWER:* | a |

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