# BC Cumulative 3

1. and are the parametric equations for
   1. A circle
   2. A square
   3. A parabola
   4. A hyperbola
2. If and are the parametric equations of a curve, the curve will have a horizontal tangent line at if
   1. and
   2. and
   3. and
   4. and
3. To find the slope of the tangent line to a parametric curve at the point where you should
   1. Evaluate
   2. Evaluate
   3. Evaluate
   4. Evaluate
4. To determine concavity of a parametric curve at the point where
   1. Evaluate
      1. Evaluate
   2. Evaluate
   3. Evaluate
5. If a parametric curve has a point where and then
   1. There is no tangent line at
      1. There is a horizontal tangent line at
   2. There is a vertical tangent line at
   3. The curve must cross itself
6. The distance traveled from to of a particle with position vector is given by
7. If a particle in the first quadrant is moving towards the axis then
8. Which of the following is **not** a polar-rectangular transformation equation?
9. If is a positive integer, the graph of always
   1. Has one intercept at
   2. Is a rose with petals
   3. Is a rose with petals
   4. Completes exactly one period of the graph over
10. The graph of
    1. Has an inner loop whenever
    2. Has an inner loop whenever
    3. Never intersects the -axis
    4. Never intersects the -axis
11. The area enclosed by a polar curve between and is always
    1. Dependent on if the curve intersects itself in the interval
12. If a polar graph is defined by and at a point where then
    1. The graph’s radius is increasing at
    2. The graph’s radius is decrasing at
    3. The tangent line to the graph has a positive slope
    4. The tangent line to the graph at has a negative slope
13. A logistic population graph with a max population of
    1. Has an asymptote at
    2. Has a decreasing growth rate when
    3. Has an increasing growth rate when
    4. Can oscillate for certain initial conditions
14. The maximum growth rate for a logistic population with carrying capacity
    1. Occurs when the population is
    2. Depends on the initial conditions
    3. Always occurs at
    4. Can happen more than once during a given solution
15. A particle moves in a plane from an initial position given by the vector at time . The particle’s velocity at any time is described by the vector function . Assuming the velocity function is integrable, which of the following expressions correctly describes the particle’s position at any later time ?