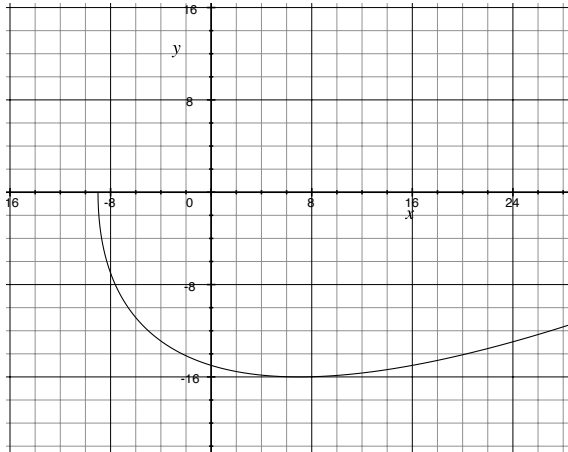


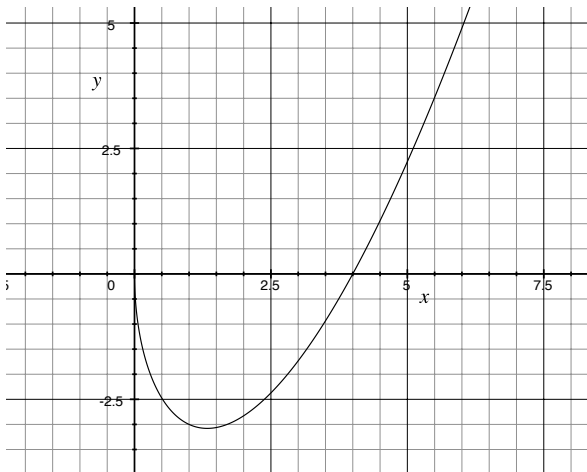
East Los Angeles College
Department of Mathematics
 Math 262
 Test 4-Take Home

Show your work for credit.

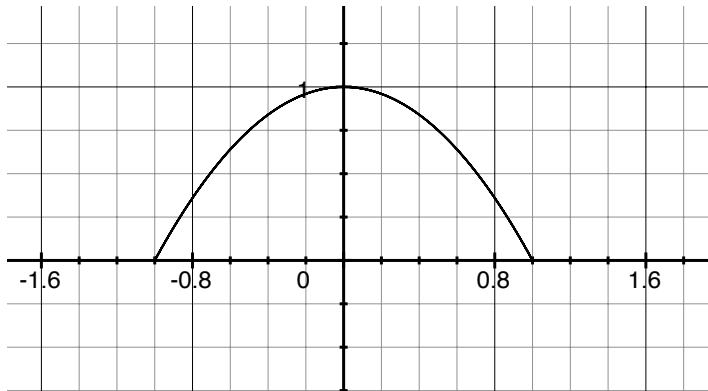
Let $x = t^2 - 9$
 $y = t^2 - 8t$ be parametric equations.



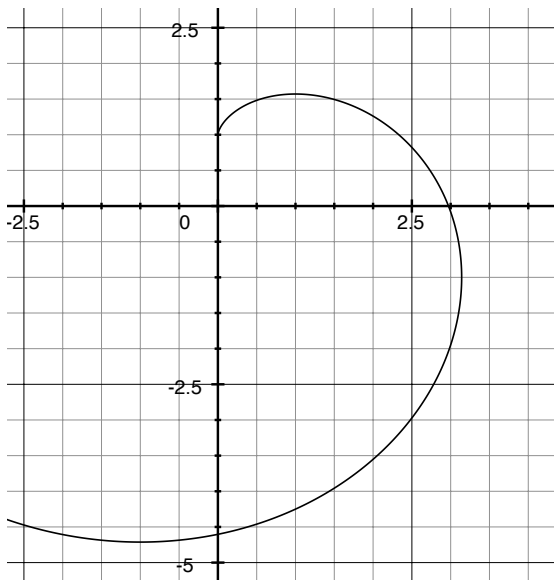
1. Draw an arrow indicating the direction of motion.
 2. Find $\frac{dy}{dx}$ when $t = 4$
 3. Find the equation of the tangent line when $t = 4$.
 4. Find the points where the slope of the tangent line equals $\frac{1}{2}$
 5. Find the points where the tangent line is horizontal.
6. Let $x = t^2$
 $y = t^3 - 4t$ be parametric equations. Determine the interval for t in which the curve is concave up.



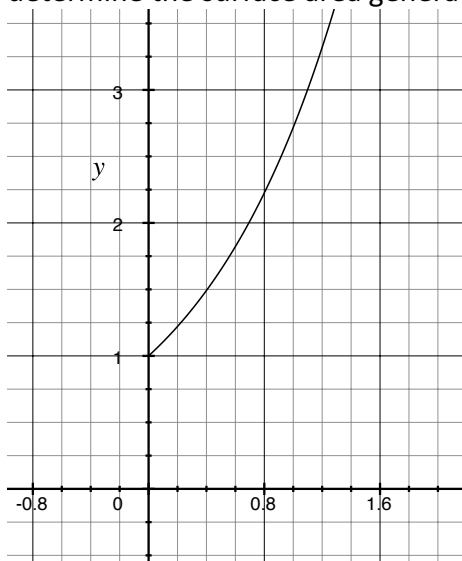
7. Let $x = \sin(t)$
 $y = \cos^2(t)$ for $0 \leq t \leq \frac{\pi}{2}$. Compute the area under the parametric curve



8. Let $x = \sin(t) - t\cos(t)$
 $y = \cos(t) + t\sin(t)$ for $0 \leq t \leq 2$ be parametric equations. Determine the arc length for the curve.



9. Let $x = t$
 $y = e^t$ for $0 \leq t \leq 1$ be parametric equations. If you rotate the curve about the x-axis, determine the surface area generated.



Determine the limits of the following sequences.

10. $\left\{ \frac{3n^3}{n^3+1} \right\}$

11. $\{e^{-n}n^{10}\}$

12. $\left\{ \left(\frac{5+n}{n} \right)^n \right\}$

13. $\left\{ \frac{n^4}{n^4+1} \right\}$

14. $\left\{ \frac{(-1)^n n^4}{n^4+1} \right\}$

15. $\left\{ \frac{\cos(n)}{n^2+1} \right\}$

Determine whether the series converges or diverges.

16. $\sum_{k=0}^{\infty} \left(\frac{e}{\pi} \right)^k$

17. $\sum_{k=0}^{\infty} \left(-\frac{3}{4} \right)^k$

18. $\sum_{k=1}^{\infty} \frac{2^{k-1}}{3^{k+1}}$

Determine whether the following telescoping series converge or diverge. Show your work by computing the sequence of partial sums.

19. $\sum_{k=1}^{\infty} \left(\frac{1}{k+1} - \frac{1}{k+2} \right)$

20. $\sum_{k=1}^{\infty} (\sqrt{k+1} - \sqrt{k})$

What is your:

21. Test 1 Scores?

22. Test 2 Scores?

23. Test 3 Scores?

24. Name?