

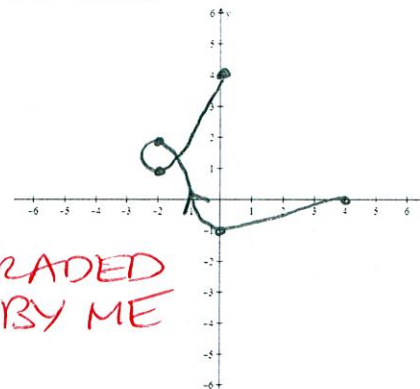
Sketch the curve represented by the parametric equations $x = t^2 - 3t$ for $-1 \leq t \leq 3$.
 $y = t - \cos \pi t$

SCORE: ____ / 5 PTS

Include the rectangular co-ordinates of 5 points on the curve. Indicate the orientation (direction) of the curve.

t	(x, y)
-1	(4, 0)
0	(0, -1)
1	(-2, 2)
2	(-2, 1)
3	(0, 4)

$\left. \begin{array}{l} \text{①} \\ \text{②} \end{array} \right\} \text{POINT EACH} = \text{②} \text{ TOTAL}$



GRADED
BY ME

Eliminate the parameter and write the rectangular equation for the curve represented by the parametric

SCORE: ____ / 3 PTS

equations $x = \ln 3t$
 $y = 6t^3$. Write your final answer in the form y as a simplified function of x .

① $t = \frac{1}{3} e^x$

① $y = 6 \left(\frac{1}{3} e^x \right)^3$

① $y = \frac{2}{9} e^{3x}$

OR $\left. \begin{array}{l} \text{①} \\ \text{②} \end{array} \right\} t = \sqrt[3]{\frac{y}{6}}$
 $\left. \begin{array}{l} \text{①} \\ \text{②} \end{array} \right\} x = \ln 3 \sqrt[3]{\frac{y}{6}}$
 $\left. \begin{array}{l} \text{①} \\ \text{②} \end{array} \right\} y = 6 \left(\frac{1}{3} e^x \right)^3 = \frac{2}{9} e^{3x} \text{ ①}$

GRADE USING
1 VERSION
ONLY

Simplify the expression $\frac{(8n-1)!}{(8n+2)!}$

SCORE: ____ / 3 PTS

$\left. \frac{(8n-1)!}{(8n+2)(8n+1)(8n)(8n-1)!} \right\} = \left. \frac{1}{8n(8n+2)(8n+1)} \right\}$
 $\text{①} \quad \text{①}$

Find the value of $\sum_{p=2}^5 (p! - 20)$.

SCORE: ____ / 3 PTS

$-18 + -14 + 4 + 100 = 72$
 $\left. \begin{array}{l} \text{①} \\ \text{②} \end{array} \right\} \text{POINT EACH} = \text{②} \text{ TOTAL} \quad \text{①}$

① $x = t^2$ ② $x = e^{-t}$

The parametric equations $y = t^2 + 2$ and $y = e^{-t} + 2$ both correspond to the rectangular equation $y = x + 2$. SCORE: ____ / 2 PTS

Explain how the parametric curves differ from each other.

AS t GOES FROM $-\infty$ TO ∞

① x ∞ TO 0 TO ∞

② ∞ TO 0

①



②



A cat jumps off a 4 foot shelf at an angle of 60° with the horizontal, at a speed of 6 feet per second.

SCORE: ____ / 3 PTS

Find parametric equations that model the cat's trajectory (path).

$$\begin{aligned} x &= (6 \cos 60^\circ)t = 3t \quad \textcircled{1} \\ y &= 4 + (6 \sin 60^\circ)t - 16t^2 = 4 + 3\sqrt{3}t - 16t^2 \quad \textcircled{\frac{1}{2}} \end{aligned}$$

Write $\frac{41}{36} - \frac{35}{49} + \frac{29}{64} - \frac{23}{81} + \frac{17}{100} - \frac{11}{121} + \frac{5}{144}$ in sigma notation. ✓ ARITHMETIC $d = -6$

SCORE: ____ / 4 PTS

$$\sum_{n=1}^7 (-1)^{n+1} \frac{41-6(n-1)}{(n+5)^2} = \sum_{n=1}^7 (-1)^{n+1} \frac{47-6n}{(n+5)^2} \quad \text{OR} \quad \sum_{n=0}^6 (-1)^n \frac{41-6n}{(n+6)^2}$$

* SUBTRACT ① IF YOU USED DIFFERENT (MISMATCHED) LETTER/INDEX INSIDE Σ OR $\sum_{n=6}^{12} (-1)^n \frac{77-6n}{n^2}$

Find parametric equations for the hyperbola with vertices $(\pm 7, 0)$ and foci $(\pm 9, 0)$.

SCORE: ____ / 3 PTS

$$9^2 = 7^2 + b^2 \rightarrow b = \sqrt{32} = 4\sqrt{2}$$

$$\begin{aligned} x &= 7 \sec t \\ y &= 4\sqrt{2} \tan t \end{aligned}$$

IF YOU HAVE BOTH

Write the first five terms of the sequence defined recursively by $a_{n+1} = n^2 - 2a_n$, $a_1 = 2$.

SCORE: ____ / 4 PTS

Write your final answer as a sequence.

$$a_2 = 1^2 - 2a_1 = 1 - 2(2) = -3$$

$$a_3 = 2^2 - 2a_2 = 4 - 2(-3) = 10$$

$$a_4 = 3^2 - 2a_3 = 9 - 2(10) = -11$$

$$a_5 = 4^2 - 2a_4 = 16 - 2(-11) = 38$$

IF WRITTEN IN A LIST

$$2, -3, 10, -11, 38$$

IF YOU GOT 2 CORRECT
3
ALL 4