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HW3-Due Jan 27 2009 M281 (526896)

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About this Assignment

Due: **Tue Jan 27 2009 08:00 PST**

1. SCalc5 13.6.046. [292214] Show Details

Find an equation for the surface consisting of all points P for which the distance from P to the x-axis is twice the distance from P to the yz-plane.

$x^2 =$ [ ]

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2. SCalc5 14.1.006. [294983] Show Details

Find the limit.

$$\lim_{t\to\infty}\left(\arctan t, e^{-2t}, \frac{\ln t}{t}\right)$$

([ ] , [ ] , [ ])

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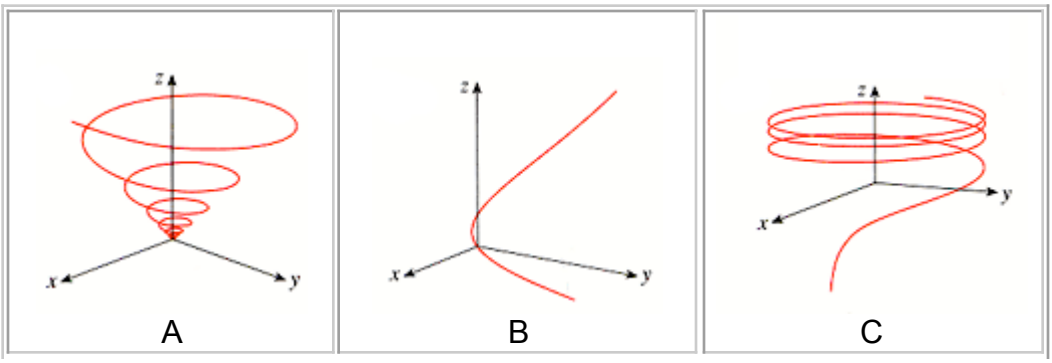
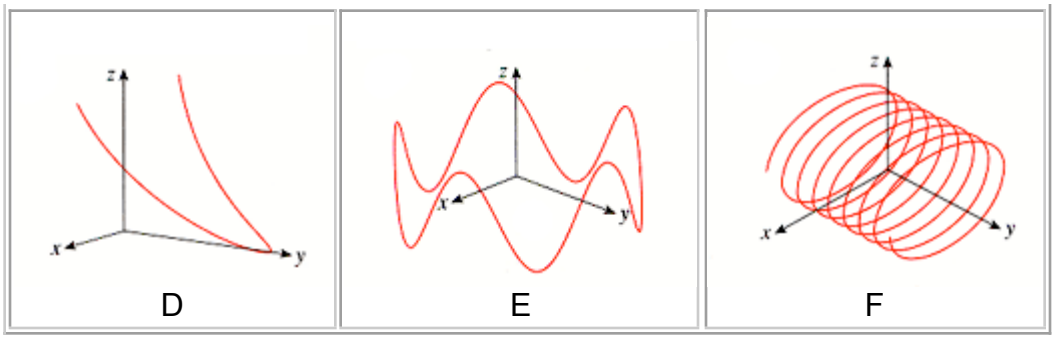
3. SCalc5 14.1.020. [295151] Show Details

Match the parametric equation with its graph.

$x = t,\ y = t^2,\ z = e^{-t}$

---Select---



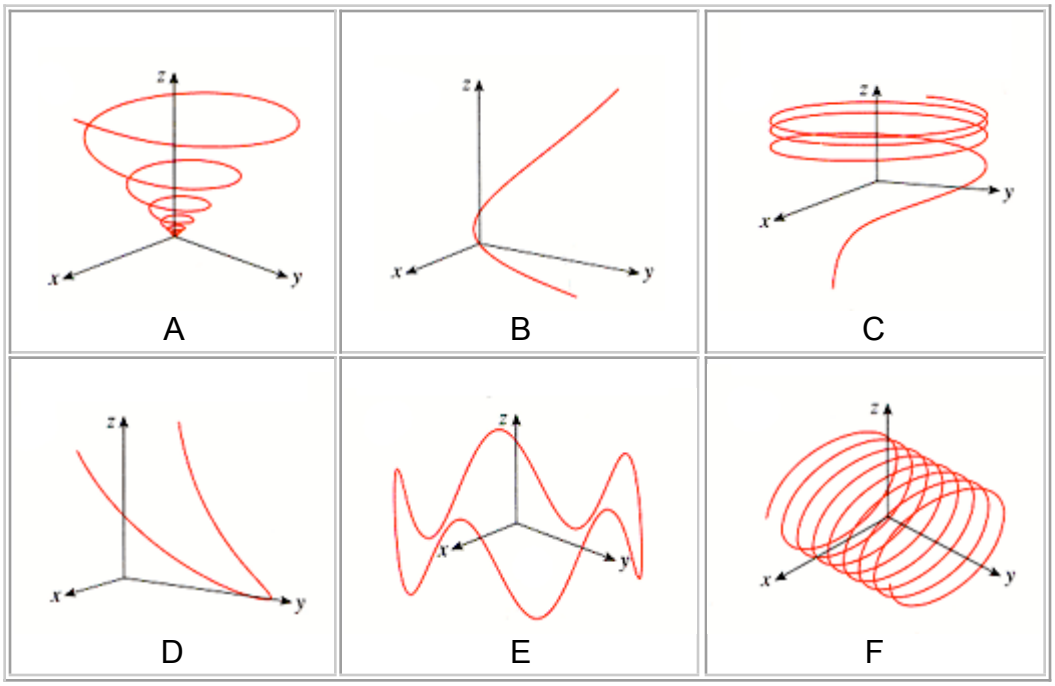


4. SCalc5 14.1.022. [295098] Show Details

Match the parametric equation with its graph.

$x = e^{-t} \cos 10t,\ y = e^{-t} \sin 10t,\ z = e^{-t}$

---Select---

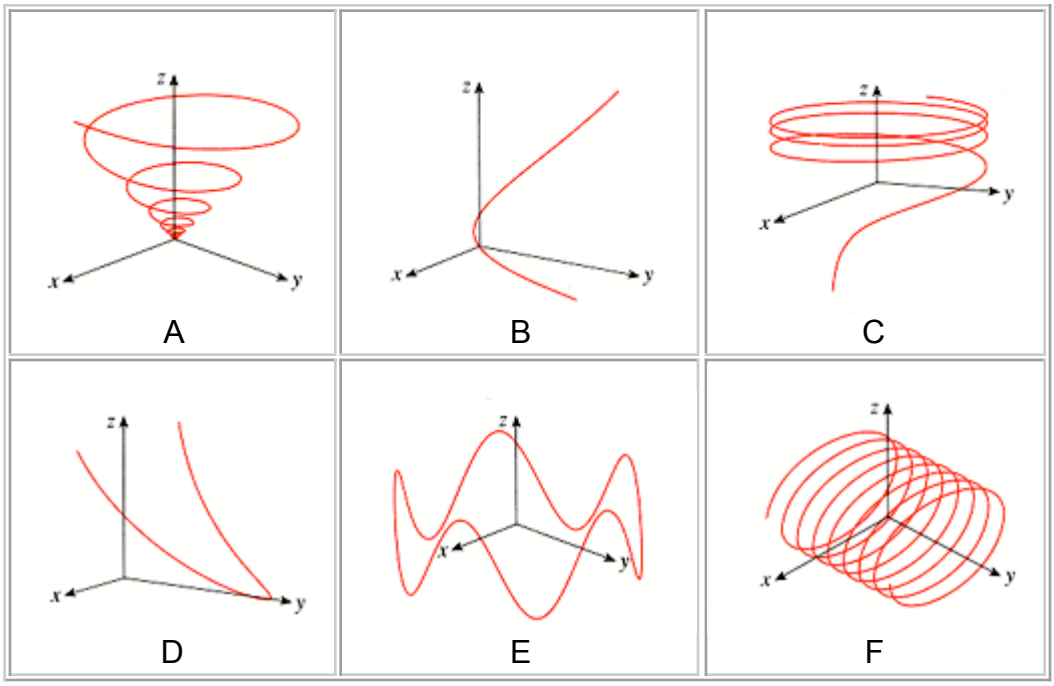


5. SCalc5 14.1.024. [294980] Show Details

Match the parametric equation with its graph.

$x = \cos t,\ y = \sin t,\ z = \ln t$

---Select---



6. SCalc5 14.2.010. [295136] Show Details

Find the derivative of the vector function.

$\mathbf{r}(t) = (\cos 2t, t, \sin 2t)$

(, ,)

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7. SCalc5 14.2.022. [295007] Show Details

If $\mathbf{r}(t) = (e^{2t}, e^{-2t}, te^{2t})$, find $\mathbf{T}(0)$, $\mathbf{r}''(0)$, and $\mathbf{r}'(t) \cdot \mathbf{r}''(t)$.

$\mathbf{T}(0) =$ (, ,)

$\mathbf{r}''(0) =$ (, ,)

$\mathbf{r}'(t) \cdot \mathbf{r}''(t) =$

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8. SCalc5 14.2.024. [295133] Show Details

Find parametric equations for the tangent line to the curve with the given

parametric equations at the specified point.

$x = t^2 - 1, y = t^2 + 1, z = t + 1; (-1, 1, 1)$

$x(t) =$

$y(t) =$

$z(t) =$

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9. SCalc5 14.2.026. [294929] Show Details

Find parametric equations for the tangent line to the curve with the given parametric equations at the specified point.

$x = \ln t, y = 2\sqrt{t}, z = t^2; (0, 2, 1)$

$x(t) =$

$y(t) =$

$z(t) =$

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10. SCalc5 14.2.032. [295104] Show Details

At what point do the curves $\mathbf{r}_1(t) = (t, 1 - t, 3 + t^2)$ and $\mathbf{r}_2(s) = (3 - s, s - 2, s^2)$ intersect?

(, ,)

Find their angle of intersection correct to the nearest degree.

°

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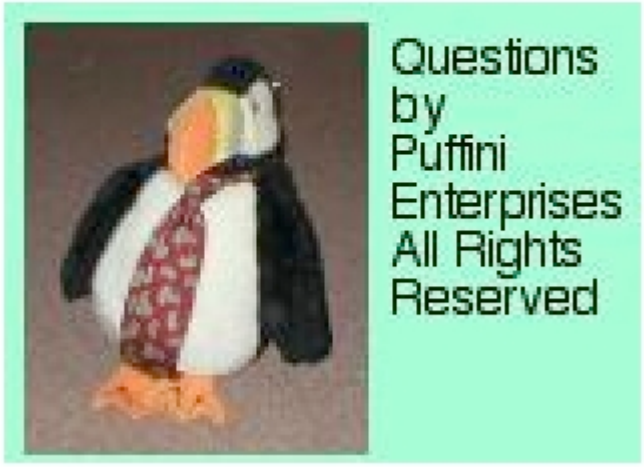
11. HW3.1-M281 [774562] Show Details

Problem 3.1. The curve $f(t) := (t, t^2, t^3)$ and the curve $g(t) := (t^2 - 2, 2t, 3t^2 - 4)$ intersect at the point $(2, 4, 8)$ when $t = 2$. Find the cosine of the angle these two curves make there.



The Cosign is .xx (Do not enter 00.**; enter .**)

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12. HW3.2-M281 [774563] Show Details

Problem 3.2. Penguin skates along the curve $\gamma(t) = (t^2, t^3)$. When $t = 2$, she slips and slides off along the tangent line. Find where Penguin is 3 seconds later when $t = 5$:

(1) Find the x-coordinate.
(2) Find the y-coordinate.

The x-coordinate

The y-coordinate

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