Parametric Equations

determine the derivative *dy/dx* for each pair of functions:

1. $x = t^2 - 1 \qquad y = t^3 + 1$

2. $x = 2 - t^2 \qquad y = t^4 - 3$

3. $x = 4t - 3t^3 \qquad y = 2t^2 + t$

4. $x = 2t^2 - 5t^4 \qquad y = 3t^3 + 2t^2$

5. $x = 2t - \sqrt{t} \qquad y = 2t + \sqrt{t}$

6. $x = \sqrt{t} - 3\mathrm{t} \qquad y = \sqrt{t} + 3\mathrm{t}$

7. $x = 2\sin(t) \qquad y = 2\cos(t)$

8. $x = 2\cos(t) \qquad y = 3\sin(t)$

9. $x = te^t \qquad y = 2t^3 - 3$

10. $x = t^3 e^{2t} \qquad y = 2te^{-t}$

Parametric Equations

answers:

1. $$\frac{dy}{dx} = \frac{3t}{2}$$

2. $$\frac{dy}{dx} = -2t^2$$

3. $$\frac{dy}{dx} = \frac{4t+1}{4-9t^2}$$

4. $$\frac{dy}{dx} = \frac{9t^2+4t}{4t-20t^3}$$

5. $$\frac{dy}{dx} = \frac{2+\frac{t^{-½}}{2}}{2-\frac{t^{-½}}{2}}$$

6. $$\frac{dy}{dx} = \frac{\frac{t^{-½}}{2}+3}{\frac{t^{-½}}{2}-3}$$

7. $$\frac{dy}{dx} = -\frac{\sin(t)}{\cos(t)}$$

8. $$\frac{dy}{dx} = -\frac{3\cos(t)}{2\sin(t)}$$

9. $$\frac{dy}{dx} = \frac{6t^2}{te^t+e^t}$$

10. $$\frac{dy}{dx} = \frac{2e^{-t}-2te^{-t}}{2t^3e^{2t}+3t^2e^{2t}}$$