

Practice Exam 2

1. Use the limit definition of derivative to find $f'(x)$ if $f(x) = \sqrt{x}$.

1. Written Solution
2. Video Solution

2. Find

$$\frac{d}{dx} \left(\frac{x^2 - 2}{x} + 3e^x \right)$$

1. Written Solution
2. Video Solution

3. Find the derivative of

$$f(x) = (x^3 + 2) \ln(x)$$

1. Written Solution
2. Video Solution

4. Find

$$\frac{d}{dx} \frac{(x^2 + 2x)(\sin(x) + 5)}{3x + 2}$$

1. Written Solution
2. Video Solution

5. Find the derivative of $f(x) = \tan^{-1}(x^4 + 2x)$.

1. Written Solution
2. Video Solution

6. Find $y' = \frac{dy}{dx}$ if

$$y^3 + x^3 = xe^y$$

1. Written Solution

2. Video Solution

7. Suppose that you are standing on the shore of a calm lake on a beautiful spring day. You cast a fishing lure out into the lake and it causes a ripple. You begin to reel the line it trying to entice a fish into biting the lure. Suddenly, you feel a tug on your line as a fish hits the lure. You set the hook and begin reeling in. As you reel in, the fish decides to run and starts swimming directly toward you at a rate of 15 feet per second. In order to keep the fish on the line, you need to keep tension on the line. Therefore, you have to reel in order to keep the line taught. Currently there is 100 feet of line let out past your pole and the tip of the pole is 10 foot above the fishes height. At what rate do you have to reel line in so that you keep the line taught?

1. Written Solution

2. Video Solution

8. Suppose that you are standing on the shore of a calm lake on a beautiful spring day. Without the wind blowing, you look out onto the lake as it sits completely still. You cast a fishing line out into the lake as you try to enjoy a day of fishing. As your lure hits the water, it causes a ripple to expand from the point of impact, creating a circle. If the radius of the ripple is increasing by 3 inches per second, how fast is the area of the ripple growing when the radius is 24 inches?

1. Written Solution

2. Video Solution