#Assignment1 Unleashing the toolbox

Saturday, May 14, 2022 9:36 AM

What is the derivative of the function $f(x) = x^{3/2} + \pi x^2 + \sqrt{7}$ evaluated at the point $x = 2$?

$f'(x) = 3/2\, x^{0.5} + 2\pi x$

$f'(2) = 3/2\sqrt{2} + 4\pi$

2. What is the derivative of the function $f(x) = x^3 cos(x) e^x$?

$f'(x) = x^3 \cos(x) e^x - x^3 \sin(x) e^x + 3x^2 \cos(x) e^x$

3. What is the derivative of the function $f(x) = e^{[(x+1)^2]}$?

$f(x)' = 2(x+1)\, e^{(x+1)^2}$

4. What is the derivative of the function $f(x) = x^2 cos(x^3)$?

$f(x)' = x^2 x - 3x^2 \sin(x^3) + 2x \cos(x^3)$

$= -3x^4 \sin(x^3) + 2x \cos(x^3)$

5. What is the derivative of the function $f(x) = \sin(x) e^{\cos(x)}$ at the point $x = \pi$?

$f(x)' = \cos(x) e^{\cos(x)} - \sin(x) \cos(x) e^{\cos(x)}$

$f(\pi)' = -1/e$