

Spiral #2

Show all work, no calculator is needed.

1. A man starts walking north at 4 ft/s from a point P . Five minutes later a women starts walking south at 5 ft/s from a point 500 ft due east of P . At what rate are the people moving apart 15 minutes after the women starts walking?

2. Evaluate the limit. $\lim_{x \rightarrow 1^+} \left(\frac{x}{x-1} - \frac{1}{\ln x} \right)$

3. Evaluate the integral. $\int \frac{3x^3 - x^2 + 6x - 4}{(x^2 + 1)(x^2 + 2)} dx$

4. Evaluate the integral. $\int_0^{\infty} \frac{\ln x}{1+x^2} dx$

5. The circle with radius r touches the curve $y = |2x|$ twice. Find the area of the region that lies between the two curves.
6. Find the length of the curve $y = \ln(\sec x)$, on the interval $[0, \pi/4]$.
7. When a cold drink is taken from a refrigerator, its temperature is 5°C . After 25 minutes in a 20°C room its temperature has increased 10°C . When will its temperature be 15°C .
8. Evaluate the integral. $\int \frac{du}{u(a+bu)^2}$