Let f be the function given by $f(x)=\dfrac{\ln x}{x}$, for all $x>0$. The derivative of f is given by $f'(x)=\dfrac{1-\ln x}{x^2}$.

a) Write an equation for the line tangent to the graph of f at $x=e^2$.

b) Find the x-coordinate of the critical point of f (where $f'(x)=0$). Determine whether this is a relative maximum, minimum, or neither for the function f.

c) Find: $\lim_{x\to 0^+} f(x)$.

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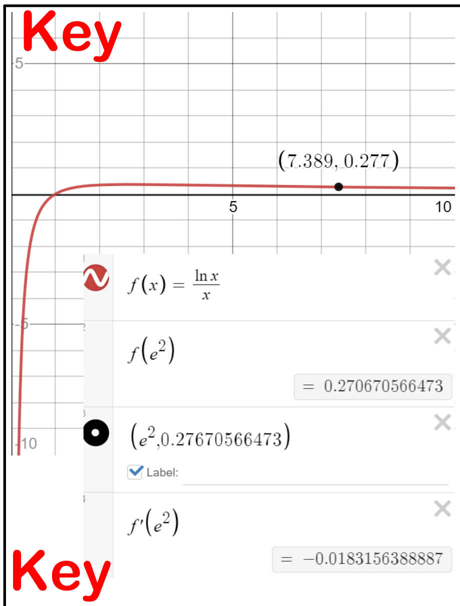
Key



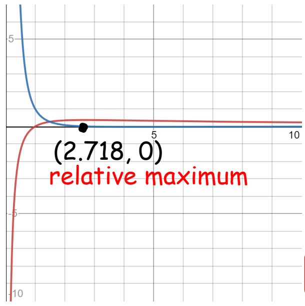
Key

a) Write an equation for the line tangent to the graph of f at $x=e^2$.

Key

$$y-0.277=-0.0183(x-7.389)$$

b) Find the x-coordinate of the critical point of f (where $f'(x)=0$). Determine whether this is a relative maximum, minimum, or neither for the function f.



c) Find: $\lim_{x\to 0^+} f(x)$.

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Key

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The velocity function for a particle is: $v(t) = (t)(t-3)(t-7)$
where t is in seconds, and v is in meters per second.

a) find the displacement of the particle in the interval [0, 7].

b) find the distance of the particle in the interval [0, 7].

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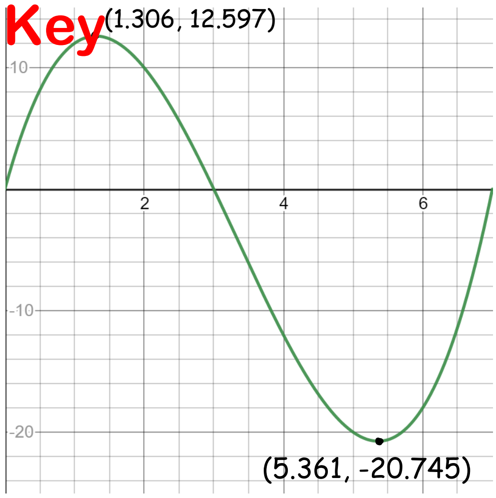
Key



The velocity function for a particle is: $v(t) = (t)(t-3)(t-7)$
where t is in seconds, and v is in meters per second.

Key

a) find the displacement of the particle in the interval [0, 7].

b) find the distance of the particle in the interval [0, 7].

$v(t) = t(t-3)(t-7)$

$\int_0^3 v(t)\,dt$ $= 24.75$

a) $\int_0^3 v(t)\,dt = 24.75$

$\int_3^7 v(t)\,dt$ $= -53.3333333333$

b)

$\int_0^3 v(t)\,dt - \int_3^7 v(t)\,dt$ $= 78.0833333333$

Key

Key

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