Motion and L'Hopital Wrap Up

Name

1.

$$\lim_{x\to\infty}\frac{\ln\left(e^{3x}+x\right)}{x}=$$

(A) 0

(B) 1

(C) 3

(D) ∞

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2. $\lim_{x\to\frac{\pi}{2}}\frac{3\cos x}{2x-\pi}$ is

(A) $-\frac{3}{2}$

(B) 0

(C) $\frac{3}{2}$

(D) nonexistent

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3. $\lim_{x\to 0}\frac{6e^{4x}-2e^{3x}-4}{\sin(2x)}=$

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(A) 2

(B) 4

(C) 9

(D) 18

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4. If the position of a particle on the x-axis at time t is $-5t^2$, then the average velocity of the particle for $0 \leq t \leq 3$ is

(A) -45

(B) -30

(C) -15

(D) -10

(E) -5

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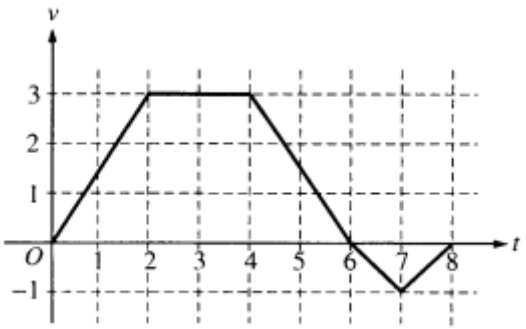
5.



A bug begins to crawl up a vertical wire at time $t = 0$. The velocity v of the bug at time t, $0 \le t \le 8$, is given by the function whose graph is shown above.
At what value of t does the bug change direction?

(A) 2

(B) 4

(C) 6

(D) 7

(E) 8