Name: _____

CLASSWORK 111

Evaluate each definite integral.

1. $\int_3^7 \sin\left(\frac{1}{2}x + 4\right) dx$

2. $\int_1^3 x \bullet (x^2 + 4x - 6)^2 \, dx$

3. $\int_5^6 6x^2 \bullet (x^3 + 5)^{\frac{3}{4}} \, dx$

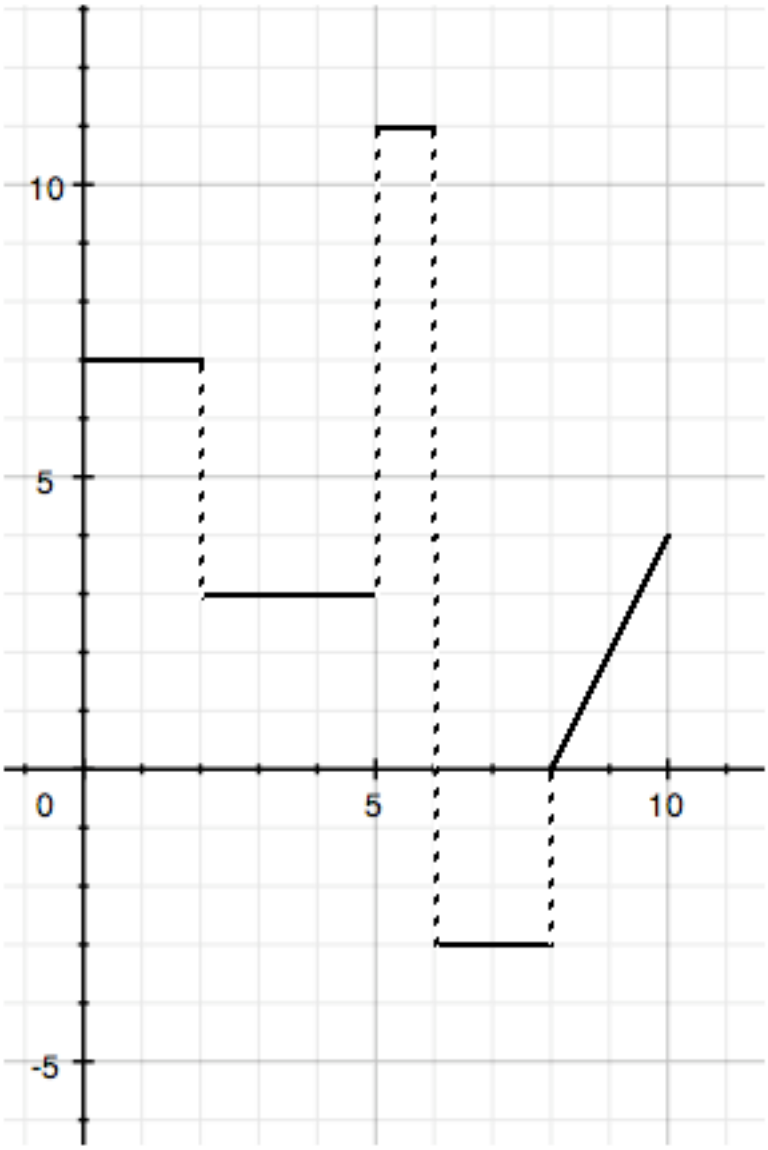
4. $\int_2^{10} x^4 \sin(x^5 - 7) \, dx$

5. $\int_4^8 \cos^6 x \ \sin x \, dx$

6. $\int_1^5 24x^5 \cos(4x^6 + 3x^2) + 6x \cos(4x^6 + 3x^2) \, dx$

What is the geographic interpretation of each of these integrals?

7. A velocity-time graph is shown below. Calculate the total distance travelled by the object over the entire interval of time between t = 0 and t = 10.



Does this graph portray realistic movement? (would a real object move like this?) Explain.

Can we know where the object started?

Do we know the actual position of the object or just *how much it has moved?*

Graph position versus time on the same graph.

8. Lily decides that she is not making enough money teaching, so instead she starts working as a waitress at the Awesome Mathematics Restaurant. Her tips at the restaurant are constantly fluctuating depending on the time of day. In fact, the rate at which she is making tips varies according to the equation

$m = \sin t + 5$

where m is her rate of dollars per hour and t is time in hours.

a) How much is Lily making in tips, per hour, at t = 2 pm?

b) If Lily's tips were constant, how much money would she make between 2 pm and 3 pm?

c) Why isn't this the actual amount of money she made?

d) Calculate the actual amount of tips she earns between 2 pm and 3 pm.