

M119 Review Test 4

Evaluate.

1) $\int (11t^2 - 7t + 3) dt$

2) $\int \frac{156}{x} dx$

3) $\int \frac{23}{x^2} dx$

4) $\int \frac{28x}{\sqrt{x}} dx$

5) $\int 8e^{4y} dy$

6) $\int 8e^{0.2x} dx$

Evaluate the indefinite integral.

7) $\int x^2(x^4 + 8x - 7) dx$

8) $\int \frac{x^3 - 8x + 2}{x^2} dx$

9) $\int 3e^{7x} dx$

10) $\int \frac{t^2 - 64}{t - 8} dt$

Evaluate the integral.

11) $\int \left(8t^2 + \frac{t}{8} \right) dt$

12) $\int \left(\frac{1}{x^4} - x^4 - \frac{1}{8} \right) dx$

13) $\int \left(\frac{\sqrt{y}}{8} + \frac{8}{\sqrt{y}} \right) dy$

Evaluate.

14) $\int_0^4 2\sqrt{x} dx$

15) $\int_0^2 (3x + 3)(3x - 3) dx$

Find the total area of the region between the curve and the x-axis.

16) $y = x^2 - 6x + 9; [2, 4]$

17) $y = -x^2 + 9; [0, 5]$

Evaluate.

18) $\int_0^b 10e^x dx$

19) $\int_1^e \frac{3}{x} dx$

20) $\int_1^e \left(12x - \frac{9}{x} \right) dx$

Solve the problem.

21) Given the velocity and initial position of a body moving along a coordinate line at time t , find the body's position at time t .
 $v = -20t + 3, s(0) = 10$

22) Find the cost function if the marginal cost function is $C'(x) = 6x - 12$ and the fixed cost is \$7.

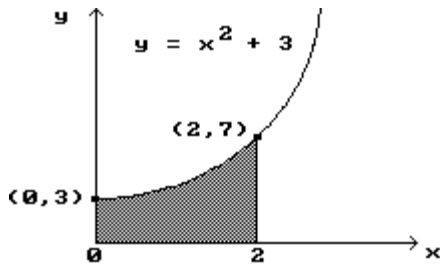
23) The rate at which an assembly line worker's efficiency E (expressed as a percent) changes with respect to time t is given by $E'(t) = 80 - 8t$, where t is the number of hours since the worker's shift began. Assuming that $E(1) = 96$, find $E(t)$.

24) A helicopter is rising straight up in the air. Its velocity at time t is $v(t) = 2t + 1$. How high does the helicopter rise during the first 5 seconds?

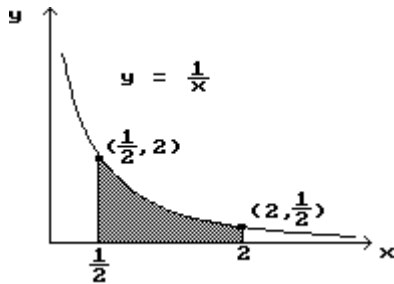
- 25) A manufacturer estimates that the marginal cost of producing q units of a certain commodity is $C'(q) = 3q^2 - 24q + 48$ dollars per unit. If the cost of producing 10 units is \$5,000, what is the cost of producing 30 units?
- 26) It is estimated that t months from now the population of a certain town will be changing at the rate of $4 + 5t^{2/3}$ people per month. If the current population is 10,000, what will be the population 8 months from now?

Find the shaded area under the given curve.

27)



28)



- 29) Sketch the graph and find the area of the region bounded by $y = -x^2 + 6x - 5$ and $y = 2x - 5$.
- 30) Sketch the graph and find the area of the region bounded by $y = 9 - x^2$ and the x-axis.
- 31) find the area of the region bounded by the curves $y = x^2 + 2$ and $y = -x^2 - 2$ and the lines $x = -2$ and $x = 3$.

Answer Key

Testname: M119-REVIEW_CH-6.TST

1) $\frac{11}{3}t^3 - \frac{7}{2}t^2 + 3t + C$

2) $156 \ln x + C$

3) $-\frac{23}{x} + C$

4) $\frac{56}{3}x^{3/2} + C$

5) $2e^{4y} + C$

6) $40e^{0.2x} + C$

7) $\frac{x^7}{7} + 2x^4 - \frac{7x^3}{3} + C$

8) $\frac{x^2}{2} - 8 \ln|x| - \frac{2}{x} + C$

9) $\frac{3}{7}e^{7x} + C$

10) $\frac{t^2}{2} + 8t + C$

11) $\frac{8}{3}t^3 + \frac{t^2}{16} + C$

12) $\frac{-1}{3x^3} - \frac{x^5}{5} - \frac{x}{8} + C$

13) $\frac{1}{12}y^{3/2} + 16\sqrt{y} + C$

14) $\frac{32}{3}$

15) 6

16) $\frac{2}{3}$

17) $\frac{10}{3}$

18) $10e^b - 10$

19) 3

20) $6e^2 - 15$

21) $s = -10t^2 + 3t + 10$

22) $C(x) = 3x^2 - 12x + 7$

23) $E(t) = 80t - 4t^2 + 20$

24) 30 feet

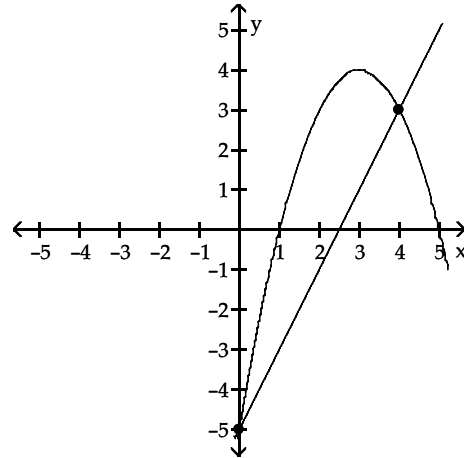
25) \$22360

26) 10,128 people

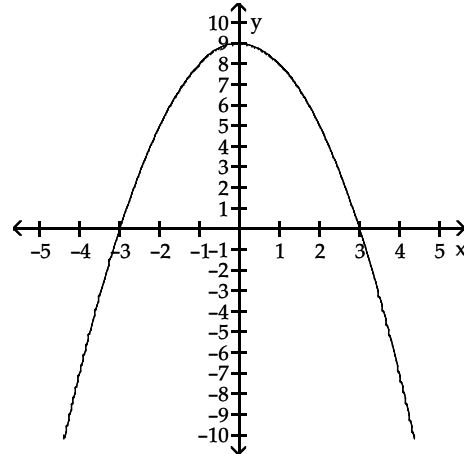
27) $\frac{26}{3}$

28) 1.39

29) $32/3$



30) $68/3$



31) $43\frac{1}{3}$