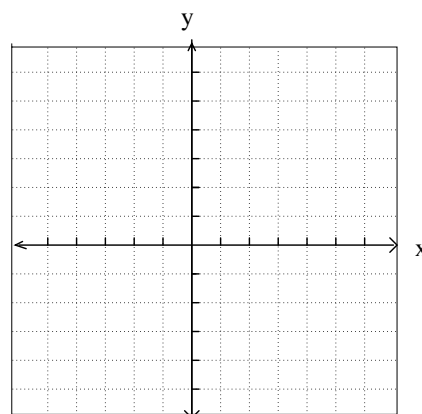


1. Graph $f(x) = \frac{2x^2 - 6x}{x - 4}$ and answer the following questions. (6 pts)

- a. intercepts _____
 b. horiz. asymptote(s) _____
 c. vertical asymptote(s) _____
 d. oblique asymptote(s) _____



2. The demand for income tax software at *BA & KB, INC* is given by $x = \frac{-5}{2}p + 120$, where p is the price in dollars and x is the number of software packages they sell each week. At what price should *BA & KB, INC* sell their income tax software in order to maximize their weekly revenue? (6 pts)

3. Find the **absolute** extrema for $f(x) = x^3 - 4x^2 + 4x$ on the interval $[-1, 2]$.

Round if necessary to 2 decimal places.

(6 pts)

4. The concentration of pain killer in a patient's bloodstream can be given by $C(t) = \frac{0.1t^3}{e^t}$, $0 \leq t \leq 12$, where $C(t)$ is in milligrams per cubic centimeter t hours after the medication has been administered. How many hours after taking the pain medication is the concentration at a maximum?

(6 pts)

5. a. $\int (9x^3 - 18x^2 + 9x)^6 * (3x^2 - 4x + 1) dx$ (5 pts)

b. $\int \frac{3x - 2}{3x^2 - 4x + 10} dx$ (5 pts)

6. $\int \frac{x + 2}{x - 5} dx$ (7 pts)

7. Find the **approximate** area between $y_1 = 2x(x-2)^2$ and $y_2 = 0$ on the interval $[-\frac{1}{2}, 6]$. Round your answer to 3 decimal places. (6 pts)

8. Find L_4 , the approximate area under the curve $f(x) = 4x^3 - 9x^2 + 10$, (using 4 rectangles from the left) on the interval $[0, 8]$.

a. $\Delta x =$ _____ (2 pts)

b. $L_4 =$ _____ (3 pts)

(write out calculations used)

c. Answer: _____ (2 pts)

9. How many rectangles are needed in the previous problem, so that the approximation is within 23 units of the exact value?

a. error function: _____ (4 pts)

b. Answer: _____ (3 pts)

10. $\int e^{5x^2} \cdot (7x) dx$ (5 pts)

b. $\int \frac{18x^2 - 24x}{(2x^3 - 4x^2 + 12)^4} dx$ (5 pts)

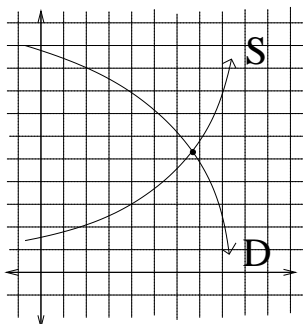
c. $\int 8 dt$ (5 pts)

11. Find the **EXACT** value: $\int_2^4 (3x^2 + \pi) dx$ (6 pts)

12. My annual salary over the 40 years I've taught school, could be modeled by the function $S(t) = 13,000 \ln|x + 1| - 150$, where t is the number of years since I began teaching, and $S(t)$ is the annual salary in dollars. Using this **hypothetical** model, find my approximate average annual salary for the second decade I taught. (6 pts)

13. If $\int_a^b f'(x) dx = 3a - b$, and $f(a) = 2a + 4b$, what is the value of $f(b)$? (6 pts)

14. Find the producers' surplus at the equilibrium price if:
 $p = D(x) = 36 - \frac{1}{4}x^2$ and $p = S(x) = 6 + 0.05x^2$. (6 pts)



***** EXTRA SPACE as needed for ungraded work. *****

<i>Page</i>	<i>Points</i>	<i>Possible</i>
1		18
2		23
3		25
4		22
5		12
<i>Total Pts</i>		100