1. Let $f(x)=e^{(x^2)}$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ is Concave Up and Increasing at $x=-2$
   b. $f(x)$ is Concave Up and Decreasing at $x=-2$
   c. $f(x)$ is Concave Down and Increasing at $x=-2$
   d. $f(x)$ is Concave Down and Decreasing at $x=-2$
   e. None of the above statements is true.
2. Let $f(x)=\frac{1}{x^3}$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ is Concave Up and Increasing at $x=2$
   b. $f(x)$ is Concave Up and Decreasing at $x=2$
   c. $f(x)$ is Concave Down and Increasing at $x=2$
   d. $f(x)$ is Concave Down and Decreasing at $x=2$
   e. None of the above statements is true.
3. Let $f(x)=\ln(x^2+1)$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ is Concave Up and Increasing at $x=-3$
   b. $f(x)$ is Concave Up and Decreasing at $x=-3$
   c. $f(x)$ is Concave Down and Increasing at $x=-3$
   d. $f(x)$ is Concave Down and Decreasing at $x=-3$
   e. None of the above statements is true.
4. Let $f(x)=\sqrt{\frac{7}{x^3}}$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ is Concave Up and Increasing at $x=4$
   b. $f(x)$ is Concave Up and Decreasing at $x=4$
   c. $f(x)$ is Concave Down and Increasing at $x=4$
   d. $f(x)$ is Concave Down and Decreasing at $x=4$
   e. None of the above statements is true.
5. Let $f(x)=x^4-12x^3+54x^2-108x+27$. Only one of the following statements about $f(x)$ is true: $\text{Hint}: f'(x)=4(x-3)^3$
   a. $f(x)$ attains a Global Max on $[-1,5]$ at $x=0$
   b. $f(x)$ attains a Global Max on $[-1,5]$ at $x=3$
   c. $f(x)$ attains a Global Max on $[-1,5]$ at $x=5$
   d. None of the above statements is true.

6. Let $f(x) = x^3 + 9x^2 + 24x - 2$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ has a local Max at $x = -4$
   b. $f(x)$ has a local Min at $x = -4$
   c. $f(x)$ has an Inflection Point at $x = -4$
   d. None of the above statements is true.
7. Let $f(x) = x^3 + 9x^2 + 24x - 2$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ has a local Max at $x = -3$
   b. $f(x)$ has a local Min at $x = -3$
   c. $f(x)$ has an Inflection Point at $x = -3$
   d. None of the above statements is true.
8. Let $f(x) = 3x^4 - 24x^3 + 190$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ has a local Max at $x = 0$
   b. $f(x)$ has a local Min at $x = 0$
   c. $f(x)$ has an Inflection Point at $x = 0$
   d. None of the above statements is true.
9. Let $f(x) = 3x^4 - 24x^3 + 190$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ has a local Max at $x = 4$
   b. $f(x)$ has a local Min at $x = 4$
   c. $f(x)$ has an Inflection Point at $x = 4$
   d. None of the above statements is true.
10. Let $f(x) = 3x^4 - 24x^3 + 190$. Only one of the following statements about $f(x)$ is true:
   a. $f(x)$ has a local Max at $x = 6$
   b. $f(x)$ has a local Min at $x = 6$
   c. $f(x)$ has an Inflection Point at $x = 6$
   d. None of the above statements is true.
11. Only one of the following statements is true:
   a. $\int \frac{1}{2\sqrt{x}}\, dx = \sqrt{x} + C$
   b. $\int \frac{1}{2\sqrt{x}}\, dx = \frac{1}{2}\ln|x| + C$
   c. $\int \frac{1}{2\sqrt{x}}\, dx = \frac{-1}{4\sqrt{x^3}} + C$

d. None of the above statements is true.

12. Only one of the following statements is true:

a. $\int \left(x^3 - 3x\right) dx = 3x^2 - 3 + C$

b. $\int \left(x^3 - 3x\right) dx = \frac{x^4}{4} - 3x + C$

c. $\int \left(x^3 - 3x\right) dx = 4x^4 - 6x^2 + C$

d. $\int \left(x^3 - 3x\right) dx = \frac{x^4}{4} - \frac{3x^2}{2} + C$

e. $\int \left(x^3 - 3x\right) dx = \frac{x^4}{3} - 3x^2 + C$

13. Only one of the following statements about $f(x)$ is true:

a. $\underset{[0,2]}{Avg}\ \sqrt[4]{x} - 2x < -2$

b. $-2 \le \underset{[0,2]}{Avg}\ \sqrt[4]{x} - 2x < -1$

c. $-1 \le \underset{[0,2]}{Avg}\ \sqrt[4]{x} - 2x < 1$

d. $\underset{[0,2]}{Avg}\ \sqrt[4]{x} - 2x \ge 1.$

14. If we estimate the value of $\int_2^{14} x^2 - 2x + 3\, dx$ using the method of LHS (Left Hand Sum) with a width of the interval of $\Delta x = 3$, we will conclude that:

a. $\int_2^{14} x^2 - 2x + 3\, dx \le 500$

b. $500 < \int_2^{14} x^2 - 2x + 3\, dx \le 700$

c. $700 < \int_2^{14} x^2 - 2x + 3\, dx \le 1000$

d. $\int_2^{14} x^2 - 2x + 3\, dx \ge 1000.$

15. If we estimate the value of $\int_2^{14} x^2 - 2x + 3\,dx$ using the method of RHS (Right Hand Sum) with a width of the interval of $\Delta x = 3$, we will conclude that:

a. $\int_2^{14} x^2 - 2x + 3\,dx \le 500$

b. $500 < \int_2^{14} x^2 - 2x + 3\,dx \le 700$

c. $700 < \int_2^{14} x^2 - 2x + 3\,dx \le 1000$

d. $\int_2^{14} x^2 - 2x + 3\,dx \ge 1000$.

16. If we estimate the value of $\int_2^{14} x^2 - 2x + 3\,dx$ using the method of BE (Best Estimate) with a width of the interval of $\Delta x = 3$, we will conclude that:

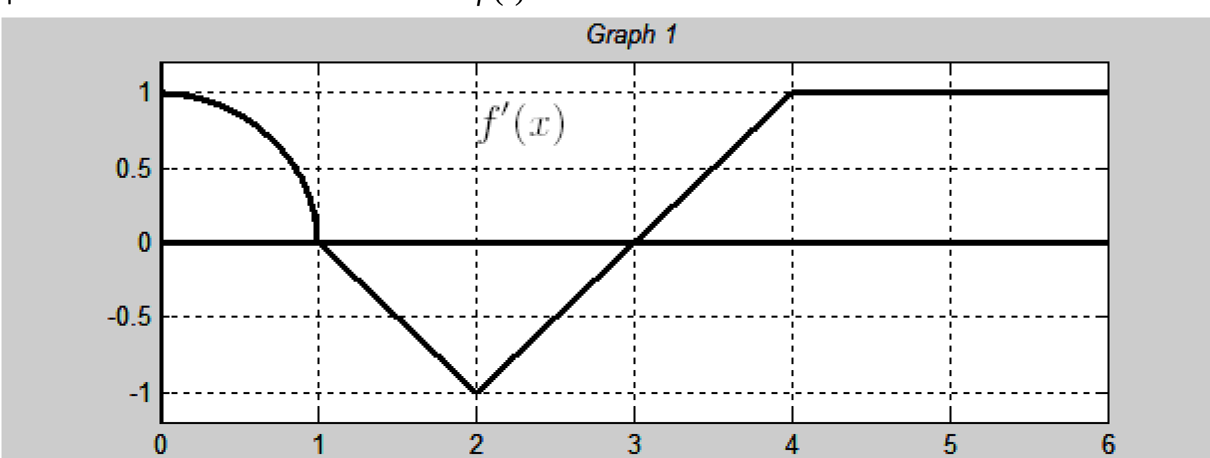
a. $\int_2^{14} x^2 - 2x + 3\,dx \le 500$

b. $500 < \int_2^{14} x^2 - 2x + 3\,dx \le 700$

c. $700 < \int_2^{14} x^2 - 2x + 3\,dx \le 1000$

d. $\int_2^{14} x^2 - 2x + 3\,dx \ge 1000$.

Questions 17-20 refer to this graph. This is the graph $f'(x)$, the derivative of $f(x)$, which consists of a quarter circle and lines. We know that $f(1) = 2$



17. In Graph 1 we have the graph of $f'(x)$, the derivative of $f(x)$. We know that $f(1)=2$. Only one of the following statements about $f(x)$ is true:

   a. $f(3)=3$

   b. $f(3)=2$

   c. $f(3)=1$

   d. None of the above statements is true.

18. In Graph 1 we have the graph of $f'(x)$, the derivative of $f(x)$. We know that $f(1)=2$. Only one of the following statements about $f(x)$ is true:

   a. $f(0)=2-\frac{\pi}{4}$

   b. $f(0)=2+\frac{\pi}{4}$

   c. $f(0)=2-\frac{\pi}{2}$

   d. $f(0)=2+\frac{\pi}{2}$

19. In Graph 1 we have the graph of $f'(x)$, the derivative of $f(x)$. Only one of the following statements about $f(x)$ is true:

   a. $f(x)$ is incresing at $x=2.5$

   b. $f(x)$ is decreasing at $x=2.5$

   c. $f(x)$ has a local maximum at $x=2.5$

   d. None of the above statements is true.

20. In Graph 1 we have the graph of $f'(x)$, the derivative of $f(x)$. Only one of the following statements about $f(x)$ is true:

   a. $f(x)$ is Concave Up at $x=1.5$

   b. $f(x)$ is Concave Down at $x=1.5$

   c. $f(x)$ has an inflection point at $x=1.5$

   d. None of the above statements is true.