

1998		82.	B	88.	C
76.	D	83.	C	89.	A
77.	E	84.	B	90.	A
78.	B	85.	C	91.	E
79.	A	86.	C	92.	D
80.	B	87.	D		
81.	B				

76.

$$\sum \binom{n}{4k}$$

$$\sum \frac{(-1)^k}{n}$$

has to be odd

78.

$$\frac{dr}{dt} = -0.1 \frac{\text{cm}}{\text{sec}}$$

$$A = \pi r^2$$

$$\frac{dA}{dt} = 2\pi r \frac{dr}{dt}$$

$$\frac{dA}{dt} = -0.1C$$

81.

$$\frac{dy}{dx} = (1-y^2)^{\frac{1}{2}}$$

$$\frac{d^2y}{dx^2} = \frac{1}{2} (1-y^2)^{-\frac{1}{2}} (-2y \frac{dy}{dx})$$

$$-y (1-y^2)^{-\frac{1}{2}} (1-y^2)^{\frac{1}{2}}$$

$$= -y$$

82. $f(x) = g(x) + 7 \quad 3 \leq x \leq 5$

$$\int_3^5 [f(x) + g(x)] dx$$

$$\int_3^5 [g(x) + 7 + g(x)] dx$$

$$\int_3^5 [2g(x) + 7] dx$$

$$\int_3^5 2g(x) dx + \int_3^5 7 dx$$

$$2 \int_3^5 g(x) dx + 7x \Big|_3^5$$

$$7(5-3)$$

83.

$$|\ln x - f(x)|$$

$$\sum_{n=1}^{\infty} (-1)^{n+1} \frac{(x-1)^n}{n}$$

$$\ln(x) - \left((x-1) - \frac{(x-1)^2}{2} + \frac{(x-1)^3}{3} \right)$$

$$\ln(1.7) - \left(0.7 - \frac{(0.7)^2}{2} + \frac{(0.7)^3}{3} \right)$$

↓
check @ $x = 1.3$

86.

$x + 2y = 8$
 $y = \frac{8-x}{2}$
 $8y = 4 - \frac{1}{2}x$

$r = \frac{1}{2} \left(4 - \frac{1}{2}x \right)$

$\int \frac{\pi r^2}{2}$

$\frac{2\pi}{2} \int_0^8 \left(\frac{1}{2} \left(4 - \frac{1}{2}x \right) \right)^2$

87.

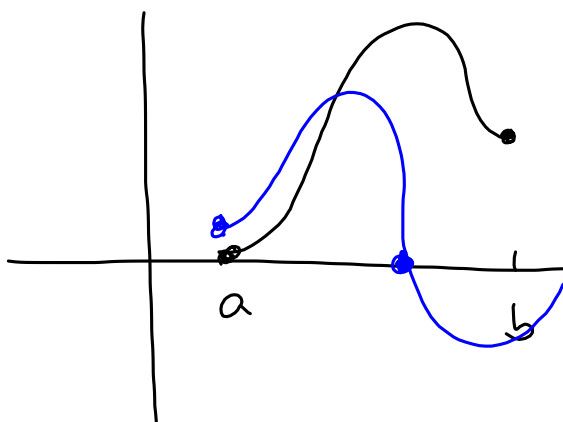
$m=1$
 $f'(x) = 1$
 $f(x) = x^4 + 2x^2$

$4x^3 + 4x = 1$

$4x^3 + 4x - 1 = 0$

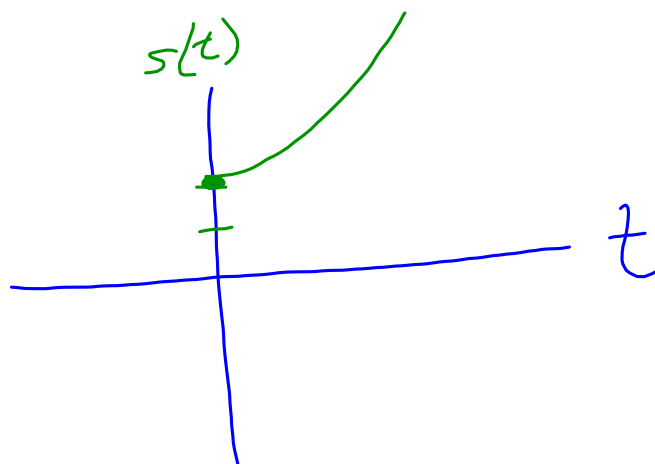
$x = \underline{\underline{.2367}}$
 $y = .11519$

88.

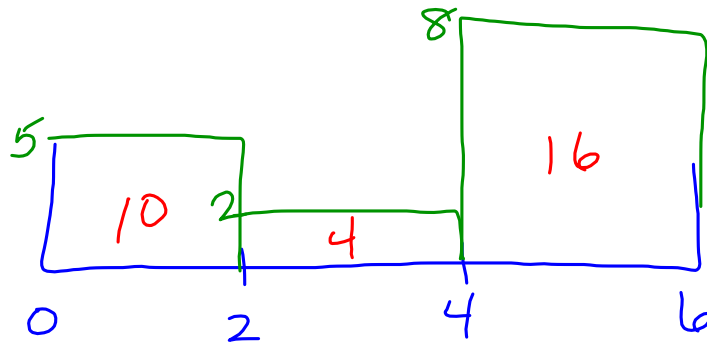


90.

@ $t=0$ 2 units from origin



q1.



$$11 + \int_0^6 a(t) dt = 41 \frac{\text{ft}}{\text{sec.}}$$

q2.

$$f(x) = x^2 - 2x + 3 \quad @x=2$$

$$f'(x) = 2x - 2 \Big|_{x=2} = 2$$

$$y = 2(x - 2) + 3 = 2x - 1$$

$$E = (x^2 - 2x + 3) - (2x - 1) < .5$$

$$x^2 - 4x + 3.5 < 0$$

76.

$$\sum \binom{n}{k} \quad k < 4$$

$$\sum \frac{(-1)^{k_n}}{n}$$

← odd

78.

$$\frac{dr}{dt} = -0.1 \frac{\text{cm}}{\text{sec.}}$$

$$A = \pi r^2$$

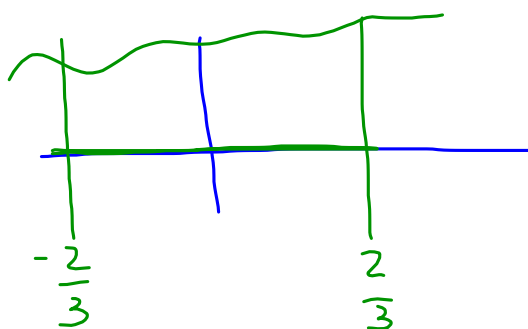
$$\frac{dA}{dt} = \underbrace{2\pi r}_C \frac{dr}{dt}$$

$$\frac{dA}{dt} = -0.1C$$

79.

$$\sqrt{x^2 - 163}$$

80.



$\int_{-2/3}^{2/3}$
 $\int_{-2/3}^{2/3}$

$$1 + \ln(\cos^4 x)$$

81.

$$\frac{dy}{dx} = (1-y^2)^{\frac{1}{2}}$$

$$\frac{d^2y}{dx^2} = \frac{1}{2} (1-y^2)^{-\frac{1}{2}} (-2y \frac{dy}{dx})$$

$$-y (1-y^2)^{-\frac{1}{2}} (1-y^2)^{\frac{1}{2}}$$

$$= -y$$

82.

$$f(x) = g(x) + 7 \quad 3 \leq x \leq 5$$

$$\int_3^5 [f(x) + g(x)] dx$$

$$[g(x) + 7 + g(x)]$$

$$\int_3^5 (2g(x) + 7) dx$$

$$2 \int_3^5 g(x) dx + \int_3^5 7 dx$$

$$7x \Big|_3^5$$

$$2 \int_3^5 g(x) dx + 14$$

83.

$$E < \underline{m(x-1)}$$

$$\frac{(-1)^2(x-1)^1}{1} + \frac{(-1)^3(x-1)^2}{2} + \frac{(-1)^4(x-1)^3}{3}$$

$$f(x) = (x-1) - \frac{(x-1)^2}{2} + \frac{(x-1)^3}{3} \quad .3 \leq x \leq 1.7$$

$$|\ln x - f(x)|$$

$$\ln .3 - \left((-.7) - \frac{(.7)^2}{2} - \frac{(.7)^3}{3} \right)$$

84.

$$\frac{(x+2)^n}{\sqrt{n}}$$

$$\frac{(x+2)^{x+1}}{(n+1)^{\frac{1}{2}}} \cdot \frac{n^{\frac{1}{2}}}{(x+2)^n} = x+2$$

$$-1 < x+2 < 1$$

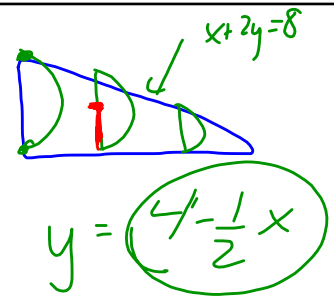
$$-3 \leq x < -1$$

$$\frac{(-3+2)^n}{\sqrt{n}} = \frac{(-1)^n}{\sqrt{n}}$$

$$\frac{(-1+2)^n}{\sqrt{n}}$$

$$P = \frac{1}{2}$$

86.



$$\int \frac{1}{2} \pi r^2$$

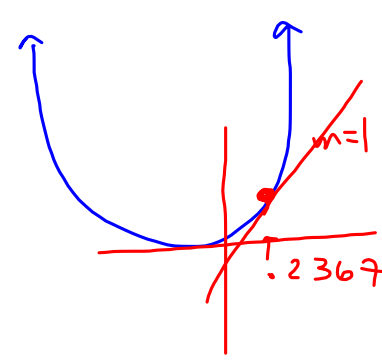
$$\int_0^8 \frac{1}{2} \pi \left(\frac{1}{2} \left(4 - \frac{1}{2}x \right) \right)^2 dx$$

$$\frac{1}{2} \pi \int_0^8 \left(2 - \frac{1}{4}x \right)^2 dx$$

87.

$x^4 + 2x^2$

$f'(x) = 4x^3 + 4x = 1 \quad m=1$



$4x^3 + 4x - 1 = 0$

$x = .2367$

$y = .11519$

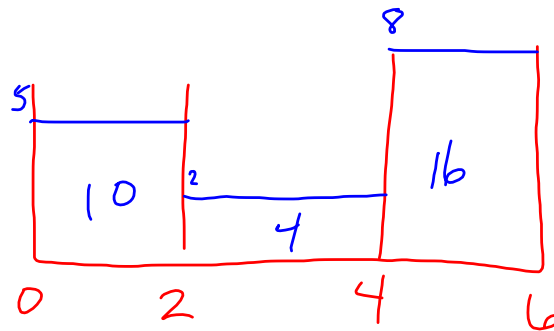
$y = 1(x - .2367) + .11519$

89.

$$1 - x + \frac{x^2}{2!} - \frac{x^3}{3!}$$

$$x^3$$

91.



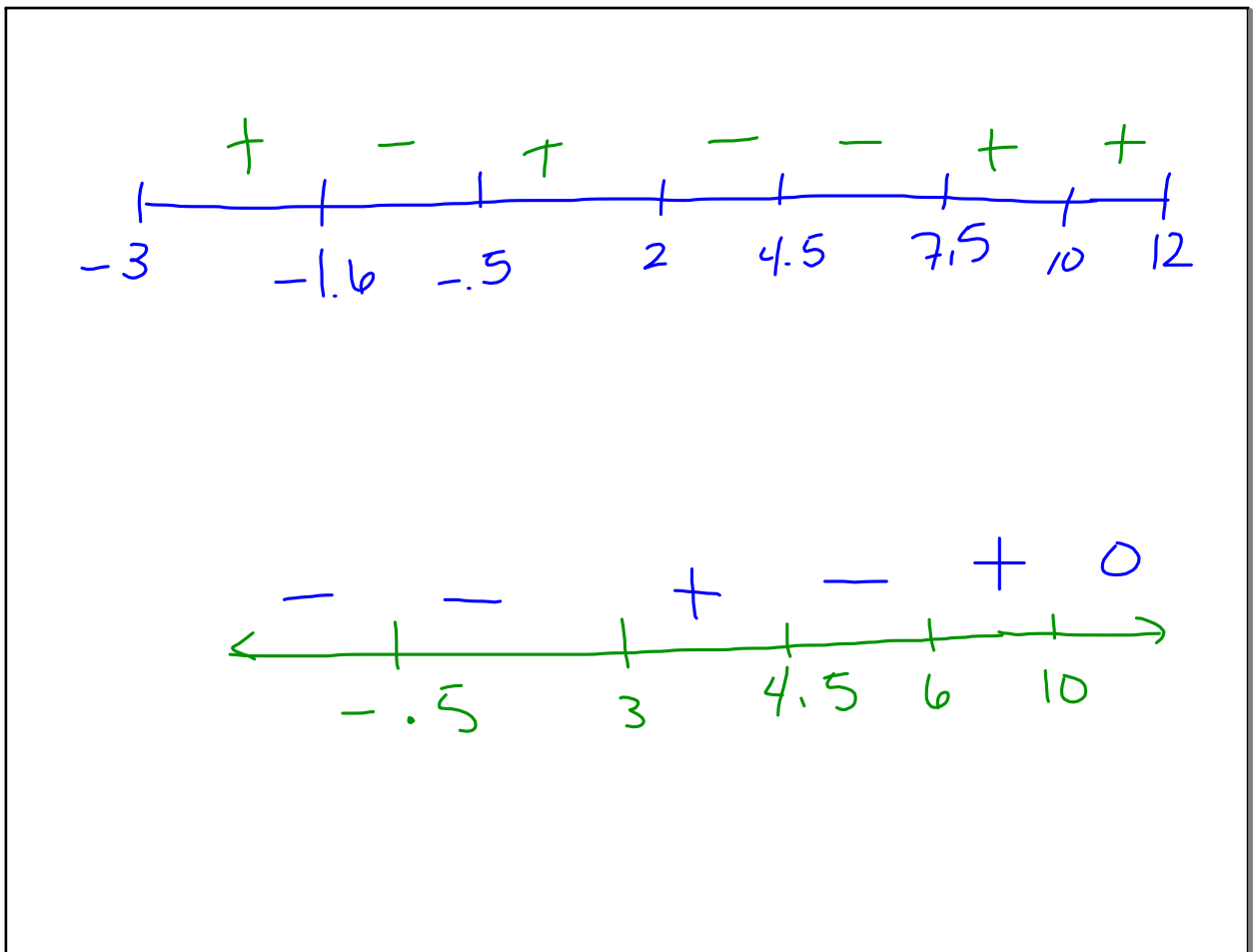
displacement
in velocity

$$11 + \int_0^6 a(t) dt = 41 \frac{\text{ft}}{\text{s}}$$

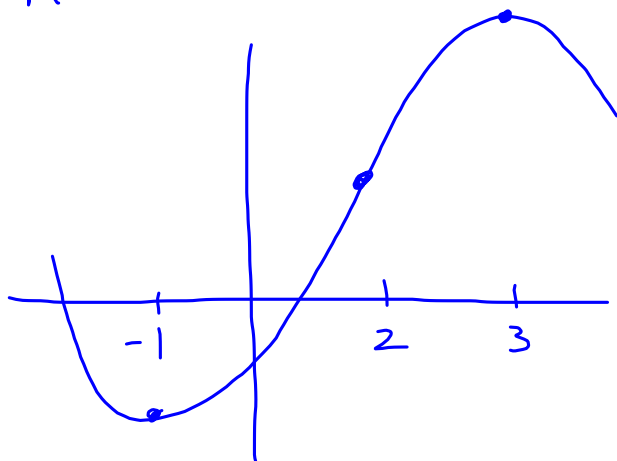
$$11 + 30$$

92. $f(x) = x^2 - 2x + 3$ @ $x=2$
 $f'(x) = 2x - 2 \Big|_{x=2}$
 tangent line
 $y = 2(x - 2) + 3$
 $2x - 4 + 3 = 2x - 1$

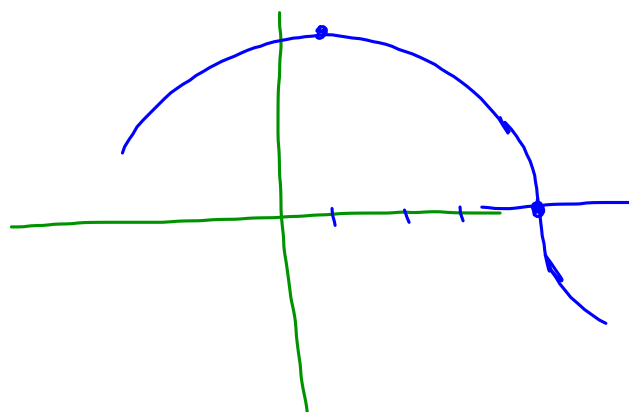
$x^2 - 2x + 3 - (2x - 1) < .5$
 $x^2 - 4x + 4 < .5$
 $x^2 - 4x + 3.5 < 0$



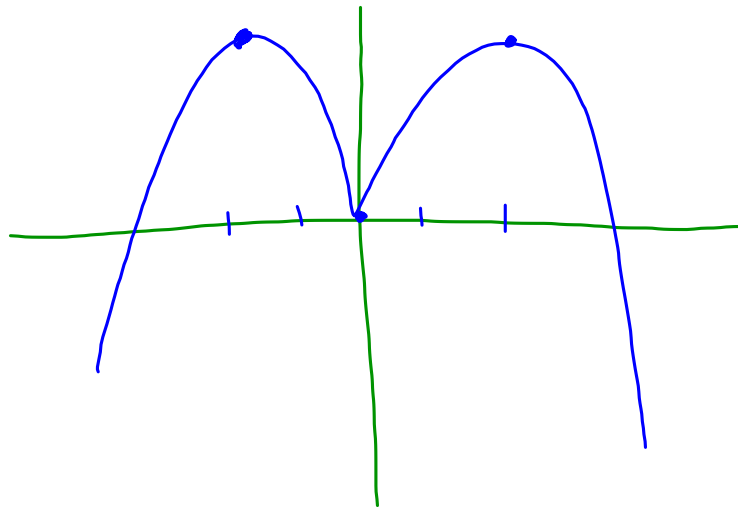
3. A



B.



C.



4c.

$$f'(x) = 2 + 2x^{-\frac{1}{3}}$$

$$2 + \frac{2}{x^{\frac{1}{3}}} = 0$$

$$\frac{2}{x^{\frac{1}{3}}} = -2$$

$$\frac{x^{\frac{1}{3}}}{2} = -\frac{1}{2} \cdot 2$$

$$x = -1$$

$x = 0, -1$

A sign chart for the first derivative $f'(x)$. It shows a horizontal line with a vertical tick mark at $x = -1$ and another at $x = 0$. The sign of the derivative is positive for $x < -1$, negative for $-1 < x < 0$, and positive for $x > 0$. The points $x = -1$ and $x = 0$ are marked with dots on the line.

min @ $x = 0$
max @ $x = -1$

$$f''(x) = -\frac{2}{3} x^{-\frac{4}{3}} = -\frac{2}{3x^{\frac{4}{3}}}$$

$x = 0$

A sign chart for the second derivative $f''(x)$. It shows a horizontal line with a vertical tick mark at $x = 0$. The sign of the second derivative is negative for $x < 0$ and positive for $x > 0$. The point $x = 0$ is marked with a dot on the line.

