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$$f(x) =$$

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

3. Find y' for each of the following. Do not simp

(a) (4 points) $y = (x+1)^2(x^2+2x)^3$

$$y' = 2(x+1)(x^2+2x)^3 + 6(x+1)^2(x^2+2x)^2$$

(b) (4 points) $y = (2x+1)\sqrt{2x+1}$

$$y' = 2 \cdot (2x+1)^{1/2} + (2x+1)$$

(c) (4 points) $y = \left(\frac{x}{x-1}\right)^2$

$$y' = 2\left(\frac{x}{x-1}\right) \cdot \left(\frac{(x-1)(1) - (x)(1)}{(x-1)^2}\right)$$

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4. C

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f

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f

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$\frac{x}{p}$

f(-

f(2

5. (5 points) Find :

$$3x^2 +$$

$$3x^2 + 4$$

6. (5 points) A 45-c
 $832t - 2.6t^2$ feet
How long will the

Max $S = 832t$

$$V = 832 - 5.2$$

$$V = 0 \Rightarrow t = \frac{832}{5.2}$$

$$S = 0 \Rightarrow 2.6t(320)$$

$$\therefore t = 0$$

$$S(160) = 932(160)$$

$$= 6656$$

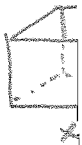
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7. (5 points)
fast i



(0.9)

8. (5 points)
base :



A'

9. Find each indefinite integral.

(a) (4 points) $\int \left(\frac{x^3 + 5x - \sqrt{x}}{x^2} \right) dx$

$$= \int \left(\frac{x^3}{x^2} + \frac{5x}{x^2} - \frac{\sqrt{x}}{x^2} \right) dx =$$

$$= \frac{x^2}{2} + 5 \ln|x| - \frac{x^{-1/2}}{-1/2} +$$

$$= \frac{1}{2}x^2 + 5 \ln|x| + \frac{2}{\sqrt{x}} +$$

(b) (4 points) $\int \frac{x}{\sqrt{7+x^2}} dx$

$$u = 7+x^2$$

$$du = 2x dx$$

$$= \frac{1}{2} \int \frac{2x dx}{\sqrt{7+x^2}} = \frac{1}{2} \int \frac{du}{\sqrt{u}}$$

$$= \frac{1}{2} \left(\frac{u^{1/2}}{1/2} \right) + C$$

10. Find each definite integral.

(a) (5 points) $\int_0^1 (8x^3 - 12x^2 + 5) dx$

$$= \left(\frac{8x^4}{4} - \frac{12x^3}{3} + 5x \right)$$

$$= (2 - 4 + 5)$$

$$= 3$$

(b) (5 points) $\int_0^{1/2} x^3(1+9x^4)^{-3/2} dx$

$$= \frac{1}{36} \int_0^{1/2} 36x^3 (1+9x^4)^{-3/2} dx$$

$$= \frac{1}{36} \int_1^{25/16} u^{-3/2} du = \frac{1}{36}$$

$$= \frac{1}{18} \left(\frac{1}{\sqrt{25/16}} - \frac{1}{\sqrt{1}} \right)$$

C

X:



$$= \frac{3}{32}$$

=

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13. (5)

14

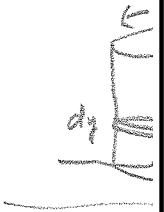
$$S = \int_0^1$$

$$= \left(\right)$$

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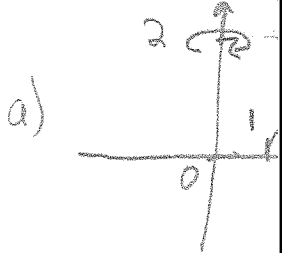
= 7380.9

BONU

16. Consider
revolving

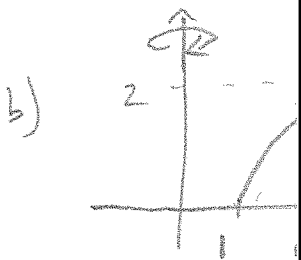
(a) (5)

(b) (5)



= 7

$$= \pi \int \left(\frac{-2^5}{5} \right)$$



$$= 2\pi \int_0^4$$

$$= 4\pi \left[\frac{1}{4} \right]$$

$$= 4\pi \left(\frac{1}{4} \right)$$