SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.
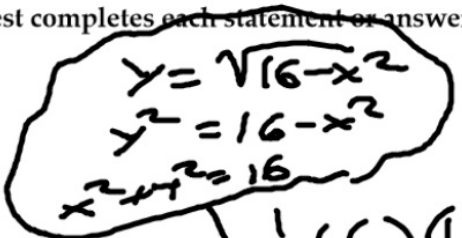
Express the limit as a definite integral.

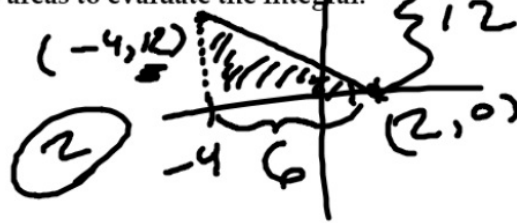1) $\lim_{n \to \infty} \sum_{k=1}^{n} (3c_k^2 - 6c_k + 16)\, \triangle x_k, \quad [-9, 2]$
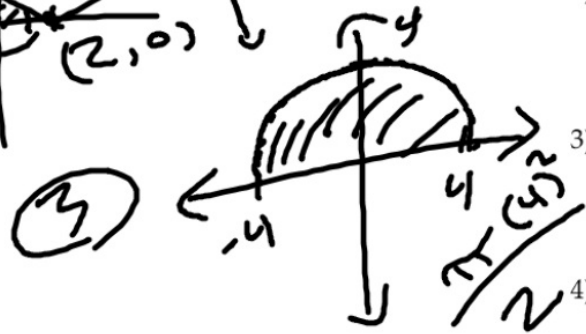
1) _____

Handwritten:
$y = \sqrt{16 - x^2}$
$y^2 = 16 - x^2$
$x^2 + y^2 = 16$

Graph the integrand and use areas to evaluate the integral.

2) $\int_{-4}^{2} (-2x + 4)\, dx$

2) _____

Handwritten: $(-4, 12)$ $\{12$ $(2, 0)$ $\frac{1}{2}(6)(12) \to 36$ (circled 2) -4 6

3) $\int_{-4}^{4} \sqrt{16 - x^2}\, dx$

3) 8π

Handwritten: (circled 3) -4 4 $\frac{\pi(4)^2}{2}$

4) $\int_{-4}^{5} |x|\, dx$

4) _____

4) $\displaystyle\int_{-4}^{5} |x|\,dx$ ④

5) $\displaystyle\int_{2}^{\sqrt{17}} r\,dr$

③

$y = r$

$\dfrac{1}{2}(b_1 + b_2)h$

$(-4, 4)$ $(5, 5)$

$\to x$

-4

$\dfrac{1}{2}(5)(5)$

$\dfrac{1}{2}(4)(4) + \dfrac{1}{2}(5)(5)$

$8 + 12.5$

$(2, 2)$ $(\sqrt{17}, \sqrt{17})$

2 $\sqrt{17}$ $(\sqrt{17} - 2)$

h
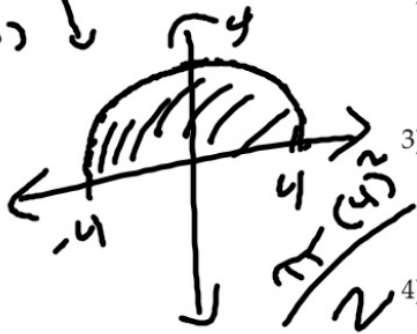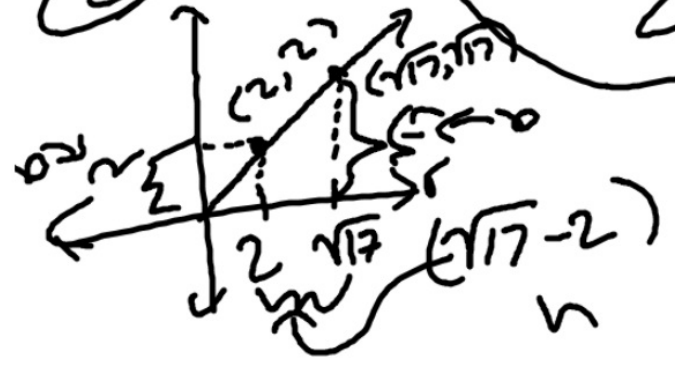
$\dfrac{1}{2}(\sqrt{17} + 2)(\sqrt{17} - 2)$

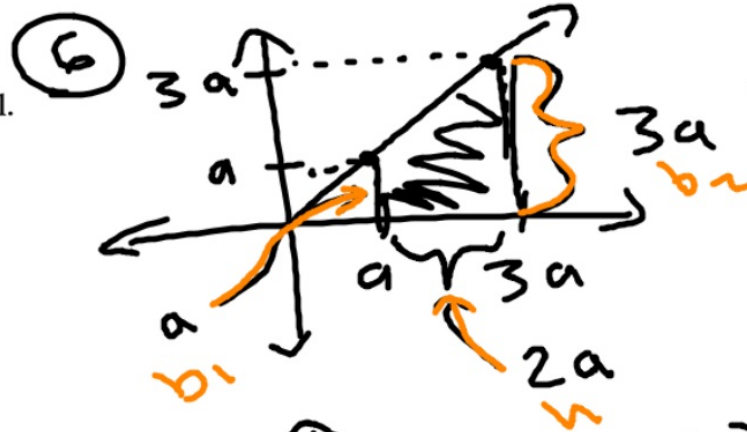$\dfrac{1}{2}(17 - 4)$

20.5

6) _____

$13/2$

7) _____

8) _____ .

5) $\int_{2}$ ...

Use areas to evaluate the integral.

6) $\int_{a}^{3a} x\,dx, \qquad a > 0$

$y = x$

7) $\int_{0}^{b} 6x\,dx, \qquad b > 0$

$y = 6x$

⑥

$3a$ $\frac{1}{2}(a+3a)(2a)$

a b_2

$a \quad 3a$

$2a$

b_1

⑦

$(b, 6b)$

$6b$

$(0,0)$ b

b

$\frac{1}{2}(6b)(b)$

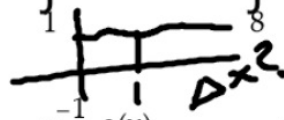5) _____

6) $4a^2$

$3b^2$
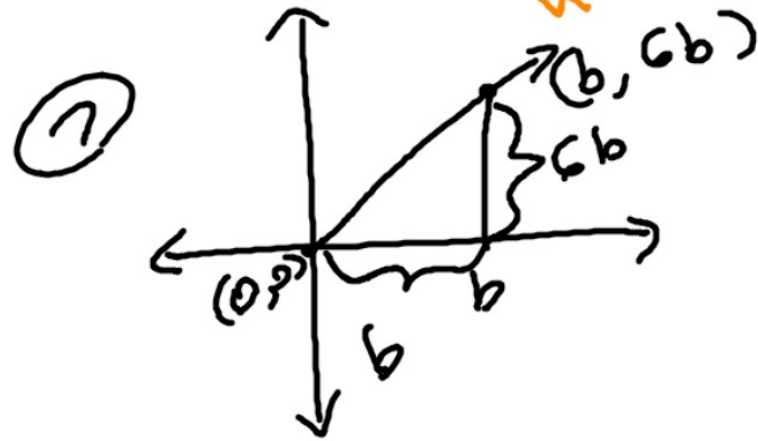
7) _____

Express the desired quantity as a definite integral and evaluate the integral.

8) A snail travels at 0.7 feet/min for 2 minutes. How far does it travel?

$$\int_0^2 .7 \, dx$$

8) ____1.4____

Solve the problem.

9) Suppose that $\int_6^8 f(x)\, dx = -2$. Find $\int_1^1 f(x)\, dx$ and $\int_8^6 f(x)\, dx$.

9) ____0 , 2____

Δx^2

10) Suppose that $\int_{-4}^{-1} g(t)\, dt = 6$. Find $\int_{-4}^{-1} \frac{g(x)}{6}\, dx$ and $\int_{-1}^{-4} - g(t)\, dt$.

10) ____1 , 6____