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17. Suppose $F(u)$ is an antiderivative of $f(u)$. Then what is $\int_{-1}^{2} 2u^3 f(u^4)\,du$? (Circle one.)

6 pts

(a) $2[F(2) - F(-1)]$
(b) $2[F(-1) - F(2)]$
(c) $\frac{2}{3}[F(-1) - F(2)]$
(d) $\frac{2}{3}[F(8) - F(-1)]$
(e) $\frac{1}{4}[F(16) - F(1)]$
(f) $\frac{1}{2}[F(16) - F(1)]$
(g) $\frac{1}{2}[F(1) - F(16)]$
(h) $\frac{1}{4}[F(1) - F(16)]$

$v = u^4$

$dv = 4u^3\,du$

$u^3\,du = \frac{1}{4}\,dv$

$u = -1 \Rightarrow v = 1$

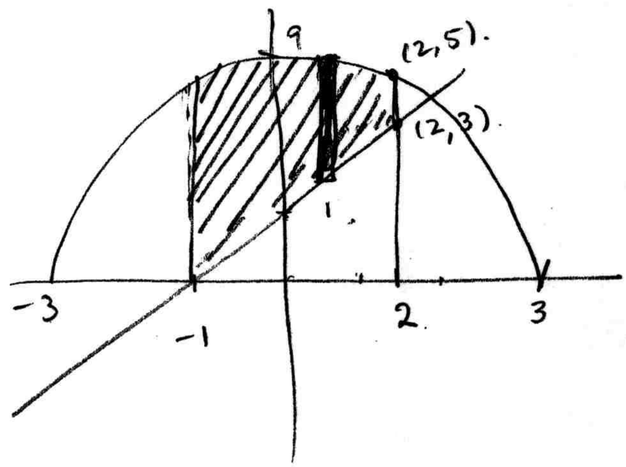
$u = 2 \Rightarrow v = 16$

$\int_{1}^{16} 2 \frac{1}{4} f(v)\,dv$

$= \frac{1}{2}[F(16) - F(1)]$.

18. Sketch the region enclosed by the curves $y = x + 1$, $y = 9 - x^2$, $x = -1$, and $x = 2$. Label the axes, and show the scaling. Draw a typical approximating rectangle, according to whether you will integrate with respect to x or y to find the area of the region. Set up the integral that gives the area. **Do not evaluate the integral.**

8 pts



$$A = \int_{-1}^{2} [9 - x^2 - (x+1)]\,dx.$$