

Math 150 Practice Test 4

1. a. Use a left endpoint approximation with  $n = 4$  rectangles to approximate the area under the graph of  $f(x) = 2x^2$  from  $x = 1$  to  $x = 3$ .
- b. Use a midpoint approximation with  $n = 4$  rectangles to approximate the area under the graph of  $f(x) = 2x^2$  from  $x = 1$  to  $x = 3$ .

2. a. Evaluate:  $\sum_{k=1}^6 \sin\left(\frac{k\pi}{2}\right)$

b. Evaluate:  $\sum_{k=0}^5 (-1)^k 2^k$

3. Evaluate:  $\frac{d}{dx} \left[ \int_1^x \sin^4 2t dt \right]$ .

4. Find  $f(x)$  if  $f'(x) = 3x^3 + 2$  and  $f(1) = 4$ .

5. Evaluate:

a.  $\int_4^9 \frac{1 - \sqrt{x}}{\sqrt{x}} dx$

b.  $\int_{-1}^1 (x + 1)^2 dx$

c.  $\int_0^{\frac{\pi}{3}} 2 \sec^2 x dx$

d.  $\int_0^{\ln 2} (e^x + 1) dx$

e.  $\int x^2 \sin(x^3) dx$

f.  $\int \frac{\tan(\ln x)}{x} dx$

g.  $\int_0^1 \frac{x}{(x^2 + 1)^2} dx$

h.  $\int \frac{x}{4+x^4} dx$

i.  $\int_{-2}^2 x10^{x^2} dx$