

Not to be submitted.

1. Evaluate the following indefinite integrals:

(a) $\int 10(5x + 4)^8 dx$

(b) $\int e^{(6-\frac{x}{2})} dx$

(c) $\int \frac{t^5 + 3t^3 + \sqrt{t}}{9t^4} dt$

(d) $\int [\sec^2(4x - 1) + \sqrt{4x - 1}] dx$

(e) $\int \csc \theta (\csc \theta - \cot \theta) d\theta$

(f) $\int 4 \sin(-4x) \cos(-4x) dx$

(g) $\int \frac{(1 + \frac{1}{x})(1 + \frac{4}{x})}{3x} dx$

(h) $\int \frac{x^3 + 8}{x + 2} dx$

2. Given $f''(x) = x + 2$, $f'(1) = 2$ and $f(0) = 3$, find $f(x)$.

3. A ball is thrown upward from the ground with an initial velocity of 1.0 m/sec. What is the maximum height reached by the ball?

4. If $F(x) = \int (e^{\cos(x)} - x^3) dx$, find $F'(0)$.

5. If $\int g(x) dx = e^{\cos(x)} - x^3 + C$, find $g(x)$.

6. Evaluate the following definite integrals:

(a) $\int_{\frac{\pi}{8}}^{\pi} \cos(2x) dx$

(b) $\int_{-2}^0 \frac{3u + 8}{3u + 7} du$

(c) $\int_2^0 (4x + 1)^{-\frac{5}{2}} dx$

(d) $\int_1^e (3x^{-3} + 5x^{-1} - 6x^2) dx$

7. Find the area under the curve $y = \frac{2}{\sqrt{2x - \frac{3}{2}}}$ on the interval $[\frac{11}{4}, \frac{35}{4}]$.

8. Find the area of the region bounded by the given curves:

(a) $y = \frac{1}{x^2}$ and $y = 2$, from $x = 1$ to $x = 2$

(b) $y = x^2 + 3x$ and $y = x + 3$

(c) $y = \frac{(x+1)^2}{2}$ and $y = x^3 + 1$

(d) $y = 2x^2$ and $y = x^4 + 1$

(e) $y = x^2$ and $y = \sec^2(2x)$, from $x = -\frac{\pi}{8}$ and $x = \frac{\pi}{8}$

(f) $y = |x|$ and $y = x^2$

Final Exam

Monday, December 16th

3:00pm–5:30pm

Thompson Centre Gymnasium