

1. (a) Add these fractions: $\frac{2}{x+1} + \frac{3}{x+2}$

(b) Evaluate: $\int \frac{5x+7}{(x+1)(x+2)} dx$

(c) Evaluate: $\int \frac{2}{x^2-1} dx$

2. A bucket that weighs 4 lb and a rope of negligible weight are used to draw water from a well that is 80 ft deep. The bucket starts with 40 lb of water and is pulled up at a rate of 2 ft/s, but water leaks out of a hole in the bucket at a rate of 0.2 lb/s. Find the work done (in ft-lb) in pulling the bucket to the top of the well.

3. Evaluate: $\int \frac{-(2x+26)}{x^2+2x-15} dx$

4. Evaluate: $\lim_{n \rightarrow \infty} \sum_{k=1}^n 5 \left(\frac{2k}{n} \right)^3 \frac{2}{n}$

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