Some Review

1. Find the most general antiderivative for each of the following:

$$\frac{1}{5} - \frac{2}{x} \qquad\qquad e^2 - \log_2(x) \qquad\qquad \frac{x^6 - x^4 + 2x}{x^4}$$

2. For the graph of g below, sketch a graph of $G(x) = \int_0^x g(t)\, dt$.
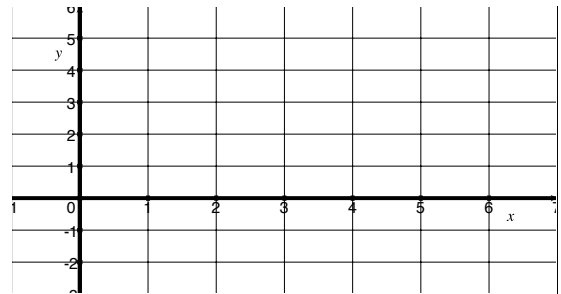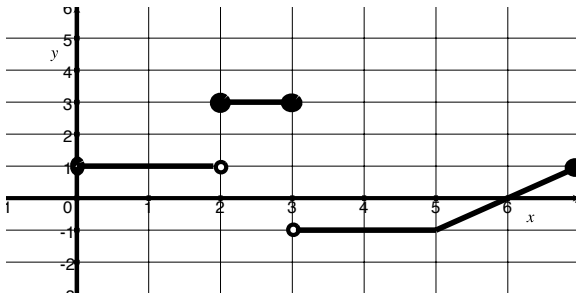
3. For each function F defined below, find F'.

$$F(x) = \int_3^x 2x - 2^x \ln(2)\, dt \qquad\qquad F(x) = \int_0^{\tan(x)} \sqrt{t + \sqrt{t}}\, dt$$

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Indefinite Integrals

1. Find the following

$$\int \frac{1}{5} - \frac{2}{x}\, dt \qquad\qquad \int e^2 - \log_2(x)\, du \qquad\qquad \int \frac{x^6 - x^4 + 2x}{x^4}\, dt$$

2. A honeybee population stars with 100 bees and increases at a rate of $n'(t)$ bees per week. What does $100 + \int_0^{15} n'(t)\, dt$ represent?

3. The velocity function (in meters per second) is given for a particle moving along a line by the function $v(t) = t^2 - t - 6$.

   (a) Find the net change (displacement) between 1 and 4 seconds.

   (b) Find the total distance traveled between 1 and 4 seconds.