

Solutions to some problems on the review sheet

1. $f(x) = (1/2)e^{2x} + (1/3)\sin(3x) + (19/2)$.
2. $f(x) = (1/2)x^2 + 4x - 7$.
3. The integrals are:

$$\int \frac{x^3 + x + 1}{x^4 + 2x^2 + 4x} dx = (1/4) \ln |x^4 + 2x^2 + 4x| + C$$

$$\int (\sqrt{x} + x)(3 + \sqrt{x}) dx = 2x^{3/2} + 2x^2 + (2/5)x^{5/2} + C$$

$$\int (1 + e^u)(3 + e^{3u}) du = 3u + (1/3)e^{3u} + 3e^u + (1/4)e^{4u} + C$$

$$\int \sin(3x) + \cos(4x) dx = -(1/3)\cos(3x) + (1/4)\sin(4x) + C$$

$$\int_0^{\pi/2} \sin x \cos^2 x dx = 1/3$$

$$\int_0^{\pi} \sin^3 x dx = 4/3$$

$$\int \tan x \sec^2 x dx = (1/2)\tan^2 x + C$$

$$\int_1^2 \frac{1 + 3x^3}{x^2} dx = 5$$

- 5b. $2(0 + 12 + 16 + 12)$.
- 5c. $2(12 + 16 + 12 + 0)$.
- 5d. $256/3$.
6. At time t the position is $(2/3)t^3 + 3t + 2$ feet.
7. $23/2$.
- 8a. 0.
- 8b. 0.
- 8c. 0.