

Each problem is worth 5 points. Provide good justification of your answers for full credit.

1. Find the most general antiderivative of

$$g(t) = \frac{1+t+t^2}{\sqrt{t}}$$

$$g(t) = \frac{1}{\sqrt{t}} + \frac{t}{\sqrt{t}} + \frac{t^2}{\sqrt{t}}$$

$$\int t^{-1/2} + t^{1/2} + t^{3/2}$$

$$2t^{1/2} + \frac{2}{3}t^{3/2} + \frac{2}{5}t^{5/2} + C$$

2. Find the most general antiderivative of

$$f(x) = \frac{2+x^2}{1+x^2}$$

$$f(x) = \frac{1+x^2}{1+x^2} + \frac{1}{1+x^2}$$

$$F(x) = \int \left(1 + \frac{1}{1+x^2} \right) dx$$

$$= x + \tan^{-1}x + C.$$

Excellent!