

MA 224 - Quiz 2 Practice Problems

Feel free to work on these with classmates. These are just practice problems to help you gauge how comfortable you are with the material—completely optional. The quiz will not be this long.

Note that this doesn't necessarily cover all the topics that the quiz can cover: it is intended to be just a review of a couple key things.

1.

$$\int \frac{7}{6} \sqrt[5]{x^2} \, dx$$

2.

$$\int w \sqrt{1 + 3w^2} \, dw$$

3.

$$\int \frac{3x^2}{2x^3 - 8} \, dx$$

4.

$$\int \frac{3e^{\frac{5}{3}x}}{5} - \frac{5}{3x^2} \, dx$$

5.a Solve the initial value problem given $\frac{dg}{dt} = \frac{t^2}{(3+t^3)^2}$, where $g(0) = 1$.

5.b Using $g(t)$ from part a, what is $g(1)$?

Answers

1. $\frac{5}{6}x^{9/5} + C$

(hint: carefully switch to exponent notation instead of radical notation, at the very beginning)

2. $\frac{1}{9}(1 + 3w^2)^{\frac{3}{2}} + C$

(hint: this is a u-substitution problem. Which piece of the integrand complicates things the most?)

3. $\frac{1}{2} \ln |2x^3 - 8| + C$

(hint: this is also a u-substitution problem.)

4. $\frac{9}{25}e^{\frac{5}{3}x} + \frac{5}{3}x^{-1} + C$ or $\frac{9}{25}e^{\frac{5}{3}x} + \frac{5}{3x} + C$ (both equally correct)

(hint: this is not a u-substitution problem)

5.a $g(t) = -\frac{1}{9+3t^3} + \frac{10}{9}$ (note: this can be written a couple different acceptable ways)

5.b $g(1) = \frac{37}{36}$