

EMT111 Test II(Practice)

October 25, 2011

1. Let $f(x) = \frac{x}{x-1}$ and $g(x) = \frac{1}{x+1}$.
 - (a) Find and simplify.
 - i. $f(\frac{1}{t})$
 - ii. $f \circ g$
 - iii. $g \circ f(2)$
 - (b) Solve $f(x) = 3$
2. Find the inverse function of
 - (a) $f(x) = 2 - x$
 - (b) $f(x) = \frac{x+1}{x+2}$
3. Find partial fraction decompositions for
 - (a) $\frac{1}{x^2-4}$
 - (b) $\frac{x^4-2x^2+4x+1}{x^3-x^2-x+1}$
4. Simplify.
 - (a) $\tan x \cos x$
 - (b) $\cos^2(2\theta) + \sin^2(2\theta)$
 - (c) $\frac{1}{1-\sin \theta} + \frac{1}{1+\sin \theta}$
5. Find the derivative of
 - (a) $f(x) = \pi^2$
 - (b) $f(x) = x^3 + 2x^2 + 1$
 - (c) $f(x) = \frac{x^2+1}{x^3}$
 - (d) $f(x) = (x^2 + 1)^4(x^3)$