You will have twenty minutes to take this quiz. Read the instructions carefully. There are more questions on the back of this page.

1. (*4 points*) *You do not need to show your work. Only the answer will be graded.*

  1. (*2 points*) Compute A and B so that

$$\frac{1}{x(x-3)} = \frac{A}{x} + \frac{B}{x-3}.$$

  2. (*2 points*) Write $\frac{x^2+4x+1}{x-3}$ as the sum of a polynomial and a proper rational function.

2. (*6 points*) *Show your work. Partial credit may be awarded.*

1. (*3 points*) The following is the reduction formula for $I_n = \int \cos^n x\, dx$.

$$I_n = \frac{1}{n} \sin x \cos^{n-1} x + \frac{n-1}{n} I_{n-2}$$

(a) Use the given reduction formula to evaluate $\int_0^\pi \cos^4 x\, dx$.

(b) Verify the reduction formula.