

**Readiness Assurance Test**

Choose the most appropriate response for each question.

1) Which of the following is a root of  $2x^2 - 6x + 5$ ?

(a)  $3 - \frac{1}{2}i$

(b)  $-3 + \frac{1}{2}i$

(c)  $\frac{3}{2} - \frac{1}{2}i$

(d)  $-\frac{3}{2} + \frac{1}{2}i$

2) Which of the following is equal to  $e^{\frac{4\pi i}{3}}$ ?

(a)  $-\frac{1}{2} - \frac{\sqrt{3}}{2}i$

(b)  $-\frac{1}{2} + \frac{\sqrt{3}}{2}i$

(c)  $-\frac{\sqrt{3}}{2} - \frac{1}{2}i$

(d)  $-\frac{\sqrt{3}}{2} + \frac{1}{2}i$

3) Which of the following is equal to  $e^{\pi(2-3i)}$ ?

(a)  $e^{3\pi}$

(b)  $-e^{3\pi}$

(c)  $e^{2\pi}$

(d)  $-e^{2\pi}$

4) Which of the following is equal to  $e^{it} - e^{-it}$ ?

(a) 0

(b) -1

(c)  $2\cos(t)$

(d)  $2i\sin(t)$

5) Compute  $\int_0^{\frac{\pi}{2}} \sin(2t) dt$

(a) 0

(b) 1

(c) 2

(d) 4

6) Which of the following differential equations models the position of an object falling in a vacuum?

(a)  $x'' = -g$

(b)  $x' = -g$

(c)  $x'' = -mg$

(d)  $x' = -mg$

7) Compute  $\int_0^1 te^t dt$

(a) 1

(b)  $e$

(c)  $e - 1$

(d)  $2e - 1$

8) Compute  $\int_0^1 te^{2t^2-1} dt$

(a)  $\frac{e-1}{4}$

(b)  $\frac{e+1}{4}$

(c)  $\frac{e-e^{-1}}{4}$

(d)  $\frac{e}{4}$

9) Compute  $\int_4^8 \frac{1}{2-t} dt$

(a)  $\ln 3$

(b)  $\ln 2$

(c)  $-\ln 2$

(d)  $-\ln 3$

10) Find the solution of the system

$$2x + 3y = 7$$

$$4x - y = 21$$

(a)  $(-5, 2)$

(b)  $(5, -1)$

(c)  $(-1, 2)$

(d)  $(-1, 4)$