Name :_____   **Sec :** ____   **ID. # :** _____   **SER. # :** ____

- **Circle the correct answer and show your work**:   **Time: 60 Min.**

1. The domain D and range R of $y = 2\cos^{-1}(2x - 3) + \pi =$ is:

   (a) $D = [-1, 1]$, $R = [-\frac{\pi}{2}, \frac{\pi}{2}]$ (b) $D = [1, 2]$, $R = [0, 2\pi]$ (c) $D = [-5, -1]$, $R = [\pi, 3\pi]$

   (d) $D = [-1, 1]$, $R = [0, \pi]$ (e) $D = [1, 2]$, $R = [\pi, 3\pi]$

2. **One vertex V** and **one focus F** of the graph of $4x^2 - y^2 + 6y - 13 = 0$ are:

   (a) $V(1, 3), F(\sqrt{5}, 3)$ (b) $V(3, 2), F(\sqrt{5}, 3)$ (c) $V(1, 3), F(3, 3)$

   (d) $V(1, 3), F(\sqrt{3}, 3)$ (e) $V(2, 3), F(\sqrt{5}, 3)$

3. If $0 \le x < 2\pi$, then the **sum** of all solutions of the equation $\frac{1}{2}\tan\frac{x}{2} = 1 - \cos x$ is:

   (a) 2π (b) $\frac{11\pi}{6}$ (c) $\frac{7\pi}{6}$ (d) π (e) $\frac{7\pi}{3}$

4. Let $\vec{u} = \, <2 \,, \, \sqrt{3} >$, $\vec{v} = \, < 3 \,, \, -1 >$. The direction angle of the vector $-\vec{u} + 2\vec{v} - 3\vec{\imath} \, + \, 2\vec{\jmath}$ is:

(a) $120°$　　　　(b) $225°$　　　　(c) $300°$　　　　(d) $330°$　　　　(e) $240°$

5. $\dfrac{2\tan 4x}{1 + \tan^2 4x}$ is identical to:

(a) $\tan 2x$　　　　(b) $\sin 8x$　　　　(c) $\cos 8x$　　　　(d) $\tan 8x$　　　　(e) $\cos 2x$

6. The **focus F** and the **axix of symmetry** of the parabola $y^2 - 2y - x - 1 = 0$ are:

(a) F$(-2, -\frac{5}{4})$, $x = -2$　　　(b) F$(-\frac{7}{4}, 1)$, $x = -2$　　　(c) F$(-\frac{1}{2}, -1)$, $x = -\frac{1}{2}$

(d) F$(-\frac{7}{4}, 1)$, $y = 1$　　　(e) F$(-\frac{3}{4}, 1)$, $y = 1$

7. The number of intersection points of the graphs of $(x-1)^2 + (y-1)^2 = 1$ and $(x-4)^2 + (y-1)^2 = 4$

is:　　(a) 4　　　　(b) 1　　　　(c) 3　　　　(d) 2　　　　(e) 0

8. The linear system: $\begin{array}{rcl} 3x & - & 4y & = & -1 \\ 2x & + & ky & = & 4 \end{array}$ is consistent and independent when:

(a) $k = -\frac{8}{3}$　　　　(b) $k = \frac{4}{3}$　　　　(c) $k = \frac{4}{3}$　　　　(d) $k \neq -\frac{2}{3}$　　　　(e) $k \neq -\frac{8}{3}$

9. The **angle between** the vectors $\vec{u} = \;<3\,,\,-1>$ and $\vec{v} = -\vec{i} + 2\vec{j}$ is:

(a) 120°　　　　(b) 30°　　　　(c) 135°　　　　(d) 150°　　　　(e) 45°

10. The value of $\sin\left(2\tan^{-1}(-\frac{1}{3})\right)$ is:

(a) $-\frac{3}{5}$　　　　(b) $\frac{3}{\sqrt{10}}$　　　　(c) $\frac{4}{5}$　　　　(d) $\frac{3}{5}$　　　　(e) $-\frac{4}{5}$