

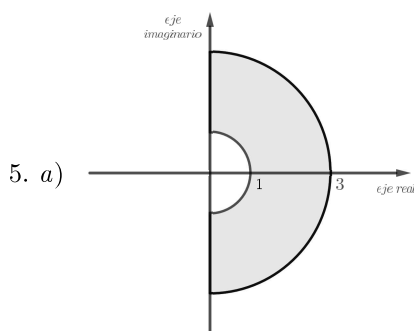
Respuestas práctica adicional Polinomios

1. a) Resuelto en hoja de enunciados.
- b) Las raíces de Q son $1\frac{\pi}{4}$, $1\frac{7}{12}\pi$, $1\frac{11}{12}\pi$, $1\frac{5}{4}\pi$, $1\frac{19}{12}\pi$ y $1\frac{23}{12}\pi$.
- c) Las raíces de R son $\sqrt{2}\frac{\pi}{3} = \frac{\sqrt{2}}{2} + \frac{\sqrt{6}}{2}i$, $\sqrt{2}\frac{5}{6}\pi = -\frac{\sqrt{6}}{2} + \frac{\sqrt{2}}{2}i$, $\sqrt{2}\frac{4}{3}\pi = -\frac{\sqrt{2}}{2} - \frac{\sqrt{6}}{2}i$ y $\sqrt{2}\frac{11}{6}\pi = \frac{\sqrt{6}}{2} - \frac{\sqrt{2}}{2}i$.
- d) Las raíces de S son -1 , $1\frac{\pi}{6} = \frac{\sqrt{3}}{2} + \frac{1}{2}i$, $1\frac{\pi}{2} = i$, $1\frac{5}{6}\pi = -\frac{\sqrt{3}}{2} + \frac{1}{2}i$, $1\frac{7}{6}\pi = -\frac{\sqrt{3}}{2} - \frac{1}{2}i$, $1\frac{3}{2}\pi = -i$ y $1\frac{11}{6}\pi = \frac{\sqrt{3}}{2} - \frac{1}{2}i$

2. a) Resuelto en hoja de enunciados.
- b) $q(x) = x(x-1)(x-\sqrt{2}-\sqrt{2}i)(x+\sqrt{2}-\sqrt{2}i)(x+\sqrt{2}+\sqrt{2}i)(x-\sqrt{2}+\sqrt{2}i)$
- c) $r(x) = 4(x+1)(x-\frac{1}{2})^2(x-\frac{\sqrt{3}}{2}-\frac{1}{2}i)(x+\frac{\sqrt{3}}{2}-\frac{1}{2}i)(x+i)$
- d) $s(x) = 2(x-3)(x-\frac{1}{2})(x-i)(x+i)$

3. a) $m = -2$;
- b) $P(x) = (x-1)^2(x-\frac{\sqrt{2}}{2}-\frac{\sqrt{2}}{2}i)(x+\frac{\sqrt{2}}{2}-\frac{\sqrt{2}}{2}i)(x+\frac{\sqrt{2}}{2}+\frac{\sqrt{2}}{2}i)(x-\frac{\sqrt{2}}{2}+\frac{\sqrt{2}}{2}i)$.

4. b) Las restantes raíces del polinomio son: $-i = 1\frac{3}{2}\pi$, $1 = 1_0$, $1\frac{2}{5}\pi$, $1\frac{4}{5}\pi$, $1\frac{6}{5}\pi$ y $1\frac{8}{5}\pi$.



- b) Las raíces de P son $z_1 = 0$, $z_2 = 2\frac{\pi}{3} = 1 + \sqrt{3}i$, $z_3 = 2\pi = -2$ y $z_4 = 2\frac{5}{3}\pi = 1 - \sqrt{3}i$.
- c) $z_1 \notin A$, $z_2 \in A$, $z_3 \notin A$, $z_4 \in A$

6. Resuelto en hoja de enunciados.

7. a) $P(x) = a(x+1)(x+1-2i)(x+1+2i) = a(x+1)(x^2+2x+5)$, $\forall a \in \mathbb{R}$ (infinitas respuestas).
- b) $P(x) = \frac{1}{9}(x-1)^3(x-2i)^2(x+2i)^2 = \frac{1}{9}(x-1)^3(x^2+4)^2$ (única respuesta).

8. a) F b) F c) F d) V