1 Complex Arithmetic: Rectangular Form

For the complex numbers $z_1 = 3 - 4i$ and $z_2 = 7 + 2i$, compute:

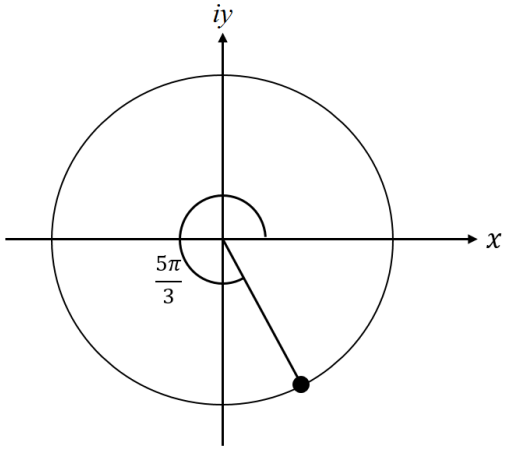
(a) $z_1 - z_2$

(b) $z_1\, z_2$

(c) $\frac{z_1}{z_2}$

2 Circle Trigonometry and Complex Numbers

Find the rectangular coordinates of the point where the angle $\frac{5\pi}{3}$ meets the unit circle. If this were a point in the complex plane, what would be the rectangular and exponential forms of the complex number? (See figure.)



3 Complex Number Algebra, Exponential to Rectangular– Practice

If $z_1 = 5e^{7i\pi/4}$, $z_2 = 3e^{-i\pi/2}$, and $z_3 = 9e^{(1+i\pi)/3}$, express each of the following complex numbers in rectangular form, i.e. in the form $x + iy$ where x and y are real.

(a) $z_1 + z_2$

(b) $z_1 z_2$

(c) $\frac{z_2}{z_3}$

4 Complex Numbers, All Forms–Practice

Represent the following four complex numbers in rectangular form $a + ib$, exponential form $|z|e^{i\phi}$, and on an Argand diagram:

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

(b) i

(c) $\sin \frac{\pi}{2}$

(d) $\cos \frac{\pi}{4} - i \sin \frac{\pi}{4}$