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MATH 1314 + MATH 0270
College Algebra with Foundations
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dividing Complex numbers

(ex) $\frac{2}{3i}$ * you cannot have an imaginary in the denominator, multiply by $\frac{i}{i}$ that will give you an i^2 in the denominator and allow you to change it into a negative one, (-1).

$$\frac{2}{3i}\cdot\frac{i}{i}=\frac{2i}{3i^2}=\frac{2i}{3(-1)}=\boxed{\frac{2i}{-3}}$$

(ex) $\frac{3}{2+5i}$ * you cannot have an imaginary in the denominator, multiply by its conjugate

$$\frac{3}{2+5i}\cdot\frac{2-5i}{2-5i}=\frac{6-15i}{4-25i^2}=\frac{6-15i}{4-25(-1)}=\frac{6-15i}{4+25}=\boxed{\frac{6-15i}{29}}$$

Boardwork

① $\frac{7}{5i}\cdot\frac{i}{i}=\frac{7i}{5i^2}=\boxed{\frac{7i}{-5}}$

② $\frac{-3}{2i}\cdot\frac{i}{i}=\frac{-3i}{2i^2}=\frac{-3i}{2(-1)}=\boxed{\frac{3i}{2}}$

③ $\frac{3+4i}{2-5i}\cdot\frac{2+5i}{2+5i}=\frac{6+15i+8i+20i^2}{4-25i^2}=\frac{6+23i+20i^2}{4-25i^2}=\frac{6+23i+20(-1)}{4-25(-1)}$

$=\frac{6+23i-20}{4+25}=\boxed{\frac{-14+23i}{29}}$

④ $\frac{2-5i}{3+4i}\cdot\frac{3-4i}{3-4i}=\frac{6-8i-15i+20i^2}{9-16i^2}=\frac{6-23i+20i^2}{9-16i^2}=\frac{6-23i+20(-1)}{9-16(-1)}$

$=\frac{6-23i-20}{9+16}=\boxed{\frac{-14-23i}{25}}$