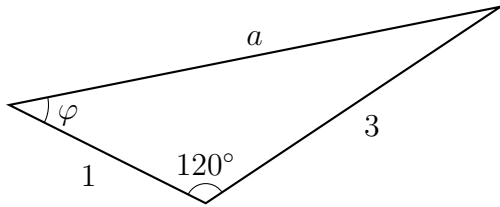


For each problem, show your work.

1. **(10 points)** In the triangle drawn below, which is not to scale, find the requested measurements.

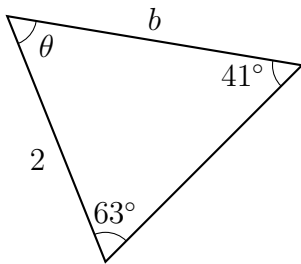
- (a) **(5 points)** The length a . *Fully simplify any trigonometric or inverse-trig functions used.*



- (b) **(5 points)** The angle-measurement φ . *Do not simplify any trigonometric or inverse-trig functions whose values are unknown.*

2. **(7 points)** In the triangle drawn below, which is not to scale, find the requested measurements.

- (a) **(2 points)** The angle-measurement θ . *Fully simplify any trigonometric or inverse-trig functions used.*



- (b) **(5 points)** The length b . *Do not simplify any trigonometric or inverse-trig functions whose values are unknown.*

3. **(3 points)** Write the trigonometric expression $\sin x \tan x + \cos x$ in as simple a form as possible.