Problem of the Week

Number Two

At some point in your mathematical babyhood you learned that

$$\sin^2\theta + \cos^2\theta = 1$$

for all values of θ. Upon reaching your mathematical toddlerhood you knew that for any two real numbers A and B, we have

$$\cos(A+B) = \cos A \cos B - \sin A \sin B.$$

That should be enough to solve this week's puzzle:

Let ϕ be such that

$$\cos\phi = \sqrt{\sin^4\theta + 4\cos^2\theta} - \sqrt{\cos^4\theta + 4\sin^2\theta}.$$

Express ϕ in terms of θ.

FOLLOW THESE INSTRUCTIONS TO THE LETTER:

Please place your name and e-mail address at the top of this page. If you are receiving class credit for participating, please indicate the course number and your professor. Your answer to the problem, coupled with a clear explanation of how you arrived at it, should appear on the back of this page. Be sure to write neatly! If I can't easily read your paper, then I will discard it.

Due **Tuesday, February 11** by 5:00 to Jason Rosenhouse in Roop 121. One weekly winner will receive a five dollar gift card to Greenberry's, and will be chosen randomly from among the correct answers.